

Heart Rate Variability (HRV) as a Physiological marker of Stress among Electronics Assembly Line Workers

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ABSTRACT

The increase in the prevalence of workplace stress is closely related to adverse effects, such as reduced organizational performance, damage to overall employee performance, high employee turnover, and absences due to health problems. On the other hand, the stress response can be expressed by a change in a physiological index, that is, heart rate variability (HRV). Therefore, the main purpose of this article is to assess the impact of workplace stress on HRV, and how HRV is assessed compared to stress self-reports. Participants are 36 assembly line workers, divided into high and low DASS scores. The name with the highest DASS score is the treatment group, consisting of 18 workers who admitted to experiencing extremely high levels of self-reported depression, anxiety, and stress (DASS) measures. Among 301 participants with normal to moderate DASS scores, 18 were randomly selected as the control group. Both groups participated in the HRV measurement meeting using EmWavePro computer system equipment. The results showed that compared with the control group (1.28), it was more difficult for the participants in the treatment group to achieve a high coherence rate (0.69). A follow-up analysis using Mann-Whitney statistics showed that there was a significant difference between the two groups ($p < 0,001$). These findings indicate that the use of DASS for self-reported stress assessment is parallel to HRV measurement, indicating that participants have a comprehensive understanding of the psychological and physical conditions. Further research using HRV biofeedback mechanisms to improve HRV continuity may help reduce negative emotional symptoms among high-stress operators.

KEYWORDS: Depression Anxiety and Stress Scale (DASS), Heart Rate Variability (HRV)

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