

## **The purpose of this study was to investigate changes of HRV indexes and heart rate (HR) during, and following a venipuncture procedure among healthy individuals” Kliszczewicz et al (2017).**

Abstract:

**BACKGROUND:** Heart Rate Variability (HRV) has been shown to be influenced by several factors such as noise, sleep status, light, and emotional arousal; however, little evidence is available concerning autonomic responses to a venipuncture. The purpose of this study was to investigate changes of HRV indexes and heart rate (HR) during, and following a venipuncture procedure among healthy individuals.

**METHODS:** 33 healthy individuals ( $22.8 \pm 0.56$  yrs,  $167 \pm 1.56$  cm,  $69.5 \pm 2.61$  kg) participated. Testing included 10-minute HRV analysis prior to the venipuncture, a one-minute venipuncture procedure followed by a 10-minute analysis of HRV, a total recording of 21-minutes. The first 5-minutes of the 21-minute recordings were discarded, and the remaining 5-minutes of the resting segment was analyzed (PRE), and the last 5-minutes of the 21-minute recording (POST). The log transformation of the time domain Root Mean Squared of Successive Differences (lnRMSSD) and the frequency domains High Frequency (lnHF) and Low Frequency (lnLF) and LF/HF ratio (lnLF/HF) were used to quantify autonomic activity. HR was measured in 1-minute segments at 2-minutes prior (PRE), venipuncture (STICK), and post (P1-5).

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**RESULTS:** HR significantly increased at STICK ( $p = 0.002$ ), and fell below resting at P-5 ( $p < 0.001$ ). lnRMSSD and lnHF increased significantly by POST ( $p < 0.001$ ,  $p = 0.005$ ). lnLF/HF ratio significantly decreased at POST ( $p = 0.047$ ), while no significant changes occurred for lnLF ( $p = 0.590$ ).

**CONCLUSIONS:** HRV and HR are influenced for ten-minutes following the venipuncture procedure. Practitioners and researchers who are interested in collecting blood and



measuring HRV need to account for the influence of the venipuncture.

Reference:

Klischewicz, B., Esco, M.R., Bechke, E., Feito, Y., Williamson, C., Brown, D. and Price, B.  
(2017) Venipuncture procedure affects heart rate variability and chronotropic response.  
Pacing and Clinical Electrophysiology. August 28th. .

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