

## **MECHANISMS OF HEART RATE VARIABILITY – THE EFFECTS OF BREATHING**

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Breathing has been shown to interact with Heart Rate Variability (HRV), causing some practitioners to caution that breathing induced changes in HRV may be misinterpreted as signaling a change in the underlying autonomic nervous state. Although such concerns have been published, there is not a standard methodology to control breathing when measuring HRV responses. The intent of this project is to ascertain the extent to which alterations in the rate, depth and muscular mechanics of breathing may affect quantitative measurements of HRV. Healthy subjects will be utilized to develop specific procedures for controlling the muscle groups to contrast “chest breathing” to “belly breathing”. No treatment will be administered in this project, as the intent is only to examine the interaction of breathing with the measurement and presentation of HRV. The intended outcome will be to determine both the necessity and the methodology for controlling breathing during HRV measurement in anticipation of future studies in which HRV measurement will be utilized in conjunction with clinical treatment in patients. A second outcome will be to use the measurements of breathing and HRV as Preliminary data for testing analytical models of autonomic nervous control of the heart rate in order to further understand the neurophysiological reflex through which breathing interacts with HRV.