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Heart Rate Variability in Response to a 3-day Kumbhaka Pranayama Practice

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Pranayama is a breathing practice commonly utilized in yoga and meditation. Research has demonstrated that Pranayama may improve lung function in athletes and induce parasympathetic withdrawal as assessed via heart rate variability (HRV). The specific Pranayama practice of Kumbhaka functions to restrict and briefly retain the breath at the peak of inhalation and exhalation, respectively, to intentionally expose the respiratory system to increased stress/pressure. **PURPOSE:** The purpose of this study was to assess HRV in response to a 3-day Kumbhaka Pranayama intervention. **METHODS:** HRV was assessed in four healthy adults (2 males, 2 females; age: 34.0 ± 4.6 years; BMI: 21.9 ± 2.3 kg/m²) while at rest in a supine position for four minutes prior to and following a Kumbhaka Pranayama intervention for three consecutive days. Six HRV indices representing time and frequency domain measures were calculated from R-R interval data collected using a heart rate monitor. **RESULTS:** A main effect of time was found for the square root of the mean of squared differences between successive R-R intervals (RMSSD) revealing a decrease in RMSSD (pre: 40.7 ± 23.3 ms; post: 32.3 ± 14.9 ms) during the Kumbhaka Pranayama sessions ($p \leq 0.05$). No other significant differences in HRV indices were found ($p > 0.05$). **CONCLUSIONS:** The participants in this study experienced a decrease in RMSSD suggesting parasympathetic withdrawal in response to an acute Kumbhaka Pranayama session. No changes in HRV, however, were observed in response to the 3-day Kumbhaka Pranayama practice. More participants assessed over a longer period of time may provide additional insight regarding the long-term effects of Kumbhaka Pranayama on HRV.