

Acute effects on heart rate variability during slow deep breathing

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Slow deep breathing is known to modulate cardiovascular control and is used in many ancient breath control practices like pranayama. The changes in Heart Rate Variability (HRV) during a less known form of Slow Deep Breathing (SDB) of 0.1Hz with equal counts of inhalation, holding and exhalation are not well documented. The study was done at AIIMS, Bhopal on 30 regular Kriya yogi volunteers who are practicing for last 10-20 years. SDB involves slow and deep inhalation through the nose, usually to a count of 15, holding for an equal count of 15, followed by slow and complete exhalation for a similar count of 15. The process was repeated for five minutes. The recording ECG for HRV analysis was taken by Heart rate Variability (Dinamika HRV - Advanced Heart Rate Variability Test System, Moscow, Russia). The resting and during readings of Heart rate Variability parameters were compared and analysed using a paired t-test SDNN and RMSSD were increased at a high

level of statistical significance during the manoeuvre. LF, HF, LF/HF ratio increased significantly. Parasympathetic activity is represented by LF when respiration rate is lower than 7 breaths per minute or during taking a deep breath. Thus, when the subject is in the state of relaxation with a slow and even breathing, the LF values can be very high indicating an increase in parasympathetic activity rather than an increase in sympathetic regulation. Practice of pranayama naturally slows the breathing, which in turn makes the heart calmer and calmer as demonstrated by a statistically significant decrease in heart rate after five minutes of SDB. Slow yogic breathing (pranayama) may serve as a physiologic method to draw upon cardio-vagal reserve and regular practice of these manoeuvre may beneficially affect cardiovascular autonomic regulation in health and in various cardiovascular diseases.

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