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Effect of yoga type of breathing on R-R interval variability and sympatho-vagal balance: Early interventions to prevent the future risk of obesity related complications

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The prevalence and severity of obesity are increasing worldwide, especially in India and other South Asian countries. Obesity increases cardiovascular morbidity and mortality risk through insulin resistance, dyslipidemia, hypertension, metabolic syndrome, diabetes etc. In recent years, Heart Rate Variability (HRV) is a simple method to evaluate the sympathovagal balance at the Sino-atrial level. The balance was changed in favor of sympathetic activity and vagal activity was decreased in obesity. Low HRV is associated with an increased risk of coronary heart disease and sudden cardiac death. Time domain analysis of HRV uses statistical methods to quantify the differences between successive R-R intervals. Frequency domain analysis of HRV calculates the respiratory dependent High Frequency (HF) and the Low Frequency (LF) powers. High frequency power is mediated by vagal activity while low frequency power has been suggested to represent both sympathetic and parasympathetic activity but predominantly sympathetic modulation. Where as LF/HF ratios reflect the mirror images of sympathovagal balance. Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional and spiritual dimensions of the individual. These techniques act through down-regulation of the Hypothalamic–Pituitary–Adrenal (HPA) axis and the Sympathetic Nervous System (SNS). Early detection and management by weight reduction and regular exercise can reduce the risk and increase HRV. This analysis can detect changes even before clinical signs appear. Thus regular assessment of HRV measures can be used as a biomarker for early detection and subsequent management of cardiovascular diseases in obese individuals.

Biography

Rajajeya Kumar Manivel has completed his MD Physiology (2006-2009) at JIPMER-An Institution of National Importance under the Ministry of Health & Family Welfare, Govt. of India. He worked as Research Assistant (2009-2012) in Advanced Centre for Yoga Therapy, Education and Research Lab, JIPMER. He did MSc Yoga in Annamalai University and completed ISAK Level 1 and 2 (2010-11). He has published more than 20 papers in reputed national & international journals. He is serving as an expert reviewer (>14) and Editorial Board Member (>15) for many national and international journals.

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