



BIOMEDICAL RESEARCH IN YOGA FOR THE IMPROVEMENT OF CARDIOVASCULAR HEALTH IN AGEING AND OBESITY

Yoga is an ancient Indian way of life, which includes changes in mental attitude, diet, and the practice of specific techniques such as *yoga asanas* (postures), breathing practices (*pranayamas*), and meditation (*dhyana*) for mindfulness to attain the highest level of consciousness (1). Of late, exercise either as modern science or as *yoga asanas* is emerging as a vascular medicine and meditation component of *yoga* being considered as mindfulness meditation is coupled with exercise or *yoga asanas* a combined modality. More over *yoga* is emerging as one of the therapeutic approaches of alternative medicine as not only life style approach but also as physical, mental and social approach of holistic medicine for cardiovascular health especially in the setting of obesity.

One of the most significant complications of obesity in the elderly is the metabolic syndrome. This clustering of risk factors including increased waist circumference, hypertension, dyslipidemia, and glucose intolerance increases the likelihood of diabetes and cardiovascular disease (2). Obesity can stress the joints leading to joint dysfunction (3) and mobility impairment as well as lead to pulmonary dysfunction and obstructive sleep apnea (4). Certain cancers are associated with higher BMIs including breast, uterine, colon and leukemia (5). *Yoga* practice has been shown to be beneficial in these disease entities through evidence based biomedical research (6) in few studies.

Indeed our group has provided evidence based research in biomedicine for the beneficial effects of *yoga* in addition to other researchers. In two hundred subjects who were included in our study [overweight (n=76) and obese (n=124)], the practice of 1 hour of *yoga*/day for three months was highly beneficial for overweight and obese adults of both the genders which was reflected in the form of improvement in the anthropometric variables, body composition, blood pressure, lipid profile, MDA (malondialdehyde) level, and total antioxidant status. Continuation of *yogic* intervention for 6 months had shown further improvement in the study participants in measured parameters (7). A study by Telles *et al.*, where obese participants have undergone a *yoga* program, which included 5 hours of *yoga*/day and had a low fat, high fibre, vegetarian diet for six days, has shown significant decrease in anthropometric variables, viz., BMI, waist and hip circumference, lipid profile parameters such as total cholesterol and HDL-C, fasting serum leptin level and an increase in postural stability and hand grip strength (8). A dedicated review on the possible links between obesity, telomeres and aging concludes: “obesity may affect telomere dynamics and accelerate the aging process” (9). The 12-week *yoga* intervention had moderately strong positive effects on anthropometric and self-reported variables in women with abdominal obesity (10).

In conclusion, *yoga* has an immense benefit on cardiovascular health supported by biomedical research. Further research in *yoga* from biomedicine angle should enhance *yoga* as an evidence based medicine in ageing and obesity so that *yoga* benefits are supported by biomedical research.

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