Clinical Study A: Therapeutic Potential of Yoga Practices in Modifying Cardiovascular Risk Profile in Middle Aged Men and Women

**Background:** To study effect of yoga on the physiological, psychological wellbeing, psychomotor parameter and modifying cardiovascular risk factors in mild to moderate hypertensive patients.

**Methods:** Twenty patients (16 males, 4 females) in the age group of 35 to 55 years with mild to moderate essential hypertension underwent yogic practices daily for one hour for three months. Biochemical, physiological and psychological parameters were studied prior and following period of three months of yoga practices, biochemical parameters included, blood glucose, lipid profile, catecholamines, MDA, Vit. C cholinesterase and urinary VMA. Psychological evaluation was done by using personal orientation inventory and subjective wellbeing.

**Results:** Results showed decrease in blood pressure and drug score modifying risk factors, i.e. blood glucose, cholesterol and triglycerides decreased overall improvement in subjective wellbeing and quality of life. There was decrease in VMA catecholamine, and decrease MDA level suggestive decrease sympathetic activity and oxidant stress. **Conclusion:** Yoga can play an important role in risk modification for cardiovascular diseases in mild to moderate hypertension.


Clinical Study B: Retardation of Coronary Atherosclerosis with Yoga Lifestyle Intervention

**Background:** Yoga has potential for benefit for patients with coronary artery disease though objective, angiographic studies are lacking.

**Material and Methods:** We evaluated possible role of lifestyle modification incorporating yoga, on retardation of coronary atherosclerotic disease. In this prospective, randomized, controlled trial, 42 men with angiographically proven coronary artery disease (CAD) were randomized to control (n = 21) and yoga intervention group (n = 21) and were followed for one year. The active group was treated with a user-friendly program consisting of yoga, control of risk factors, diet control and moderate aerobic exercise. The control group was managed by conventional methods i.e. risk factor control and American Heart Association step I diet.

**Results:** At one year, the yoga groups showed significant reduction in number of anginal episodes per week, improved exercise capacity and decrease in body weight. Serum total cholesterol, LDL cholesterol and triglyceride levels also showed greater reductions as compared with control group. Revascularization procedures (coronary angioplasty or bypass surgery) were less frequently required in the yoga group (one versus eight patients; relative risk = 5.45; P = 0.01). Coronary angiography repeated at one year showed that significantly more lesions regressed (20% versus 2%) and less lesions progressed (5% versus 37%) in the yoga group (chi-square = 24.9; P < 0.0001). The compliance to the total program was excellent and no side
effects were observed. **Conclusion:** Yoga lifestyle intervention retards progression and increases regression of coronary atherosclerosis in patients with severe coronary artery disease. It also improves symptomatic status, functional class and risk factor profile.


**Clinical Study C: Effect of Yoga on Cardiovascular System in Subjects Older Than 40 years**

**Background:** This study was conducted to examine the effect of yoga on cardiovascular function in subjects above 40 yrs of age. Pulse rate, systolic and diastolic blood pressure and Valsalva ratio were studied in 50 control subjects (not doing any type of physical exercise) and 50 study subjects who had been practicing yoga for 5 years.

**Method:** There were 100 subjects above 40 years of age of both sexes. Study group included 50 subjects (mean age in years 53.04 ± 9.974), randomly selected from Janardanswami Yogabhyasi Mandal Ramnagar, Nagpur, performing “Yoga” i.e. ‘Asanas’ (postural exercises), ‘Pranayamas’ (breathing techniques), and ‘Savasana’ (meditation), since 5 years under proper guidance of the instructor. The control group consisted of 50 subjects (mean age in years 51.4 ± 6.536) from the non-teaching staff members of Government Medical College and hospital Nagpur, who were not doing Yoga or any type of physical exercise on regular basis.

**Results:** The mean value of pulse rate was lower in study than control group statistically to the significant extent (P<0.001). The statistical difference in the mean systolic and diastolic BP in between study and control group was significant (P<0.01, P<0.001 respectively). Valsalva ratio in the study group was statistically less than controls to the significant extent (P<0.001).

**Conclusion:** Thus from our study it seems that cardiovascular parameters alters with age but these alterations are slower in persons aging with yoga. So yoga can be used as an intervention in aging persons to reduce the morbidity and mortality from cardiovascular diseases which are now toping the lists

Jyotsana R. Bharshankar, Rajay N. Vijjaykumar N. Deshpande, Shoba B. Geeta B. Gosavi , 2001, Department of Physiology, Govt. Medical College,, Nagpur, India.