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## Editorial

# Yoga – A promising technique to control cardiovascular disease



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Yoga is an ancient Indian mind body technique which is becoming increasingly popular throughout the world because of its several health benefits. Yoga is an integrated system of self culture which aims at harmonious development of body, mind and covers all aspects of human life that lead to physical well being, mental harmony culminating into positive thinking, happiness and peace. Yoga envisages health in totality on the principle of healthy mind in a healthy body. Yoga is not merely a few postures (asanas) but a holistic life style which promotes physical, mental, emotional and spiritual well being.<sup>1</sup> Although there are many types of yoga, Hatha Yoga is most commonly practiced. Core components of Hatha Yoga include stretching exercises and physical postures (Asanas), breath control (Pranayama) and concentration techniques (Meditation). Yoga is believed to help detoxify the body, mitigate chronic fatigue, enhance endurance, improve organ and immune functions.<sup>2</sup> Beneficial effects of yoga have been reported in multiple chronic conditions including depression, stress, anxiety, menopausal symptoms, arthritis, low back pain, cancer, allergies, asthma, acid peptic disease, irritable bowel syndrome, migraine, metabolic syndrome, diabetes mellitus, cardiovascular diseases (CVD) etc.<sup>3–5</sup> Yoga appears to be especially beneficial for primary and secondary prevention of CVD.

suggesting that yoga may contribute to general health and particularly in cardiac health in populations that are subject to significant mental stress.<sup>6</sup> Several studies suggest that yoga may significantly improve risk factors for CVD like body weight, lipid profile, blood pressure, smoking, psychosocial stress and type 2 diabetes mellitus.<sup>7–10</sup> Though the results of yoga on hypertension are mixed, a recent meta analysis studied the effect of transcendental medication (TM) on blood pressure in nine well conducted randomized controlled trials.<sup>11</sup> TM compared to control was associated with reduction of systolic BP by 4.7 mm Hg (CI 1.9–7.4) and diastolic BP of 3.2 mm Hg (CI 1.3–5.6). Although the reduction in BP by yoga and meditation is modest, this could significantly decrease the risk of CVD because it has been estimated that reducing systolic BP by 3 mm Hg in general population has potential to reduce stroke mortality by 8% and coronary heart disease (CHD) by 5%.<sup>12,13</sup> The possible mechanism of reduction of blood pressure is considered to be reduced sympathetic activity and restoration of baro receptor sensitivity by yoga.<sup>14</sup> In a recently published scientific statement or alternative methods to lower blood pressure (BP) and reduce CVD risk, the American Heart Association (AHA) reported that Transcendental Meditation TM techniques may be considered in clinical practice to lower BP. The AHA also reported research that TM may reduce heart attacks, stroke and deaths in CVD patients.<sup>15</sup>

## 1. Yoga for primary prevention of CVD

Modern life style stresses have been shown to be a major contributory factor to many diseases including CVD. A US based study has demonstrated that mindfulness based stress reduction (MBSR) such as yoga, reduced the average number of visits to primary care physicians in inner city areas

## 2. Yoga for secondary prevention

In a recent randomized controlled trial of TM and health education in Blacks, it has been reported that there was a 48% risk reduction in primary end point which was composite of all cause mortality, myocardial infarction and stroke over a

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period of 5.4 years.<sup>16</sup> Two randomized trials have also shown that early atherosclerosis (as assessed by carotid intimal medial thickness) is significantly reduced by regular practice of yoga/meditation.<sup>17,18</sup> Three controlled studies utilizing coronary angiography in advanced CHD have demonstrated that yoga/meditation with use of low fat vegetarian diet caused retardation of progression and even regression of coronary obstructions as compared to usual care control group.<sup>19–21</sup> In addition, the need for interventional procedures was significantly reduced. LDLc, triglycerides, body weight, angina and exercise induced ischemia were also significantly reduced in the yoga group. Yoga may be a useful tool for cardiac rehabilitation also because yoga leads to improved physical fitness, stress reduction and general well being.<sup>22</sup> Yoga also contributes to decreased physiological arousal, better sleep and appetite.<sup>23,24</sup>

A few small trials have demonstrated the benefits of yoga in cardiac rehabilitation.<sup>25,26</sup>

This issue of Indian Heart Journal has an article on Yoga based cardiac rehabilitation after coronary bypass surgery – one year results on LVEF, lipid profile, psychological stress – a randomized study) which clearly suggests the benefits of yoga in improving the LVEF, lipids, hyperglycemia and decrease in stress, anxiety and depression as compared to the control group.<sup>27</sup> Long term studies are needed to determine whether these positive effects are translated into decreased mortality.

### 3. Limitations of yoga studies

Although yoga/meditation has been demonstrated to be useful in primary and secondary prevention of CVD, there are several limitations of the reported studies. Most of the studies have small sample size and have inconsistencies in baseline, many have absence of adequate controls and have non uniform methodologies. Large multicentric randomized trials are needed to confirm these findings. However as yoga/meditation is a cost effective simple technique without any side effects and hence could be recommended for primary and secondary prevention of CVD and that it can play a primary or complimentary role in this regard.<sup>28</sup>

#### REFERENCES

- Herrick CM, Ainswort AD. Invest in yourself. Yoga as a self-care strategy. *Nurs Forum*. 2000;35:32–36.
- Raub J. Psychophysiologic effects of Hatha Yoga on musculoskeletal and cardiopulmonary function: a literature review. *J Altern Complement Med*. 2002;8:797–812.
- prepared for. *Meditation Practices for Health. State of the Research*. Agency for Healthcare Research and Quantity; US Department of Health and Human Services; 2007.
- Innes KE, Bourguignon C, Taylor AG. Risk indices associated with the insulin resistance syndrome, cardiovascular disease, and possible protection with yoga: a systematic review. *J Am Board Fam Pract*. 2005;18:491–519.
- Manchanda SC, Madan K. Yoga and meditation in cardiovascular disease. *Clin Res Cardiol*. 2014. <http://dx.doi.org/10.1007/S00392-014-9663-9>.
- Roth B, Stanley TW. Mindfulness-based stress reduction and healthcare utilization in the inner city: preliminary findings. *Altern Ther Health Med*. 2002;8:60–62, 64–6.
- Schmidt T, Wijga A, Von Zur Mühlen A, Brabant G, Wagner TO. Changes in cardiovascular risk factors and hormones during a comprehensive residential three month kriya yoga training and vegetarian nutrition. *Acta Physiol Scand Suppl*. 1997;640:158–162.
- Mahajan A, Reddy K, Sachdeva U. Lipid profile of coronary risk subjects following yogic lifestyle intervention. *Indian Heart J*. 1999;51:37–40.
- Tang YY, Tang R, Posner MI. Brief meditation training induces smoking reduction. *Proc Natl Acad Sci U S A*. 2013;110:13971–13975.
- Jain S, Uppal A, Bhatnagar S, Talukdar B. A study of response pattern of non-insulin dependent diabetics to yoga therapy. *Diabetes Res Clin Pract*. 1993;19:69–74.
- Anderson JW, Liu C, Kryscio RJ. Blood pressure response to transcendental meditation: a meta-analysis. *Am J Hypertens*. 2008;21:310–316.
- Stamler J, Rose G, Stamler R, Elliott P, Dyer A, Marmot M. INTERSALT study findings. Public health and medical care implications. *Hypertension*. 1989;14:570–577.
- Appel LJ. Lifestyle modification as a means to prevent and treat high blood pressure. *J Am Soc Nephrol*. 2003;14:S99–S102.
- Selvamurthy W, Sridharan K, Ray US, et al. A new physiological approach to control essential hypertension. *Indian J Physiol Pharmacol*. 1998;42:205–213.
- Brook RD, Appel LJ, Rubenfire M, et al. Beyond medications and diet. Alternative approaches to lowering blood pressure. A Scientific Statement from American Heart Association. *Hypertension*. 2013;61:1360–1363.
- Schneider RH, Grim CE, Rainforth MV, et al. Stress reduction in the secondary prevention of cardiovascular disease: randomized, controlled trial of transcendental meditation and health education in Blacks. *Circ Cardiovasc Qual Outcomes*. 2012;5:750–758.
- Manchanda SC, Mehrotra UC, Makhija A, Mohanty A, Dhawan S, Sawhney JPS. Reversal of early atherosclerosis in metabolic syndrome by yoga: a randomized controlled trial. *J Yoga Phys Ther*. 2013;3:132. <http://dx.doi.org/10.4172/2157-7595.1000132>.
- Fields JZ, Walton KG, Schneider RH, et al. Effect of a multimodality natural medicine program on carotid atherosclerosis in older subjects: a pilot trial of Maharishi Vedic Medicine. *Am J Cardiol*. 2002;89:952–958.
- Ornish D, Brown SE, Scherwitz LW, et al. Can lifestyle changes reverse coronary heart disease? The lifestyle heart trial. *Lancet*. 1990;336:129–133.
- Manchanda S, Narang R, Reddy K, et al. Retardation of coronary atherosclerosis with yoga lifestyle intervention. *J Assoc Phys India*. 2000;48:687–694.
- Gupta SK, Sawhney RC, Rai L, et al. Regression of coronary atherosclerosis through healthy lifestyle in coronary artery disease patients—Mount Abu open heart trial. *Indian Heart J*. 2011;63:461–469.
- Telles S, Naveen KV. Yoga for rehabilitation: an overview. *Indian J Med Sci*. 1997;51:123–127.
- Raju PS, Madhavi S, Prasad KV, et al. Comparison of effects of yoga and physical exercise in athletes. *Indian J Med Res*. 1994;100:81–86.
- Malathi A, Damodaran A, Shah N, Patil N, Maratha S. Effect of yogic practices on subjective well being. *Indian J Physiol Pharmacol*. 2000;44:202–206.

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25. Tulpule TH, Tulpule AT. Yoga a method of relaxation for rehabilitation after myocardial infarction. *Indian Heart J.* 1980;32:1–7.
  26. Silberman A, Banthia R, Estay IS, et al. The effectiveness and efficacy of an intensive cardiac rehabilitation program in 24 sites. *Am J Health Promot.* 2010;24:260–266.
  27. Yoga based cardiac rehabilitation after coronary artery bypass surgery: one-year results on LVEF, lipid profile, psychological states-a randomized controlled study. *Indian HEART J.* 2014;66:490–502.
  28. La Forge R. Mind–body fitness: encouraging prospects for primary and secondary prevention. *J Cardiovasc Nurs.* 1997;11:53–65.