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A REVIEW ON IMPORTANCE OF YOGA IN CARDIAC HEALTH

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ABSTRACT

The effectiveness of yoga in the main and secondary prevention of ischemic heart disease, as well as post-myocardial infarction patient rehabilitation, is investigated in this study. Yoga is an unusual type of physical training that has been performed in the Indian subcontinent for a long time. It has become very popular as a form of leisure all around the globe. Its potential benefits to healthy living have been investigated, with numerous intriguing findings. Yoga's benefits in the reduction of cardiovascular risk factors and the rehabilitation of post-myocardial infarction patients are both substantial. It's essential to consider the practical implications and appropriateness of include yoga in a complete cardiac rehabilitation program. The majority of rehabilitation professionals think that integrating nontraditional types of physical exercise, such as yoga, will significantly improve effectiveness and value. The purpose of this article is to look at the history and science of yoga, as well as to assess its impact on cardiovascular health.

KEYWORDS: *Cardiac Rehabilitation, Exercise Ischaemic Heart Disease, Prevention, Yoga.*

1. INTRODUCTION

Yoga is characterized as a treasure trove of physical and mental methods that may be utilized to successfully promote physical and mental well-being. It is a long-standing custom that may be traced back to the early civilizations of Central Asia. Its impact may be observed in many different nations' cultural traditions. It thrived and developed as a lively way of life and spiritual practice in India.

Traditional exercise, especially moderate-intensity aerobic exercise, is well-known for its role in the primary and secondary prevention of ischemic heart disease. After a myocardial infarction, gradually increasing activity speeds up the healing process. Though not widely practiced, there is mounting evidence that types of exercise such as yoga, which have been practiced in the East since the dawn of time, are helpful in the treatment of ischemic heart disease. These advantages are not limited to the main and secondary prevention of ischemic heart disease, but also include symptom treatment, risk factor reduction, and atherosclerotic plaque regression in diseased

arteries. In an age where there is a growing reliance on pharmacotherapy for the treatment of ischemic heart disease, which is costly and not necessarily without side effects, the introduction or integration of other kinds of exercise such as yoga may be very beneficial. There is no doubt that such a strategy would complement current treatment regimens while also helping to substantially decrease therapy-related costs. Yoga entails adopting a variety of basic to complicated bodily positions (asanas) and holding them for a specified amount of time. Yoga also involves regulated breathing, deliberate mental focus (meditation), and/or the repetitive recitation of mantras. Yoga has grown in popularity as a supplement to healthy living since its introduction into mainstream western culture. It has even become a fashion statement among the urban middle classes in certain cases **[1], [2].**

1.2. YOGA History:

Yoga is a 5000-year-old lifestyle, health, and spirituality practice that originated on the Indian peninsula. Its rudiments are said to have come from the Indus valley region's oldest known human civilizations (current day Pakistan). The Yoga Sutra, which is the canonical book on the theory of classical yoga, is where the yoga tradition's recorded history begins. Patanjali, a historically known yoga instructor and Hindu philosopher, wrote this book, which is thought to have been composed somewhere between 200 BC and 300 AD. Swami Vivekananda promoted Eastern Hindu philosophy in the late nineteenth and early twentieth century, and his work helped yoga reach the Western mainstream **[3], [4].**

1.2. The body postures (Asanas) and breathing:

The adoption and maintenance of particular bodily postures, as well as the accompanying regulated breathing methods, are the cornerstones of yoga practice. According to the Gherananda–Samhita, an old Indian classic on the practice of yoga, there are 840,000 asanas, but only one tenth of them, or 84, are utilized in modern general practice. Only 32 of them are suggested by this old book as being beneficial for daily practice. Each asana should be held for 5–20 breaths, according to the ancient scriptures. Pranayama is a yogic breathing practice that includes taking a slow, deep breath while focusing on the abdominal muscles and diaphragm. The breath is held in full inspiration for a little time within the boundaries of comfort before being permitted to exhale slowly and naturally. In complete exhalation, breathing is stopped within the boundaries of comfort once again.

1.3. Yoga in the primary prevention of ischaemic heart disease:

Urban and modern-day stressors have long been thought to be significant factors to a variety of illnesses, including ischemic heart disease. Mindfulness-based stress reduction (MBSR), such as yoga, has been found to reduce the frequency of visits to the primary care physician among middle-class people in inner-city regions of the United States. This finding indicates that yoga may benefit overall health and, in particular, heart health in those who are under a lot of stress.

Reduced heart rate variability and baroreflex sensitivity are both strong indicators of poor prognosis in heart disease. Slow breathing, as used in yogic practice, improves heart rate variability and baroreflex sensitivity by re-synchronizing the body's natural rhythms. The recitation of the Holy Rosary, as well as yoga mantras (chanting), has been found to reduce respiration to nearly precisely six breaths per minute, while simultaneously improving heart rate variability and baroreflex sensitivity. Not only in respiratory signals, but also in ECG RR

intervals, systolic and diastolic blood pressures, and transcranial blood flow signals, this down-regulatory impact has been found. Although the positive effects of recitations such as yoga on physiological parameters have been shown, the long-term advantages of such alterations in the prevention of ischemic heart disease have yet to be proved, necessitating additional research and evaluation **[5].**

1.4. Yoga effects on body physiology in modifying coronary risk factors:

1.4.1. Hypertension:

In today's clinical practice, medication is the backbone of hypertension treatment. Many antihypertensive drugs have been linked to a slew of negative side effects. In hypertensive individuals, several non-pharmacological interventions, such as reducing salt consumption by 100 mmol/day, have been linked to a drop in blood pressure of approximately 5–7 mmHg (systolic)/2.7 mmHg (diastolic). Furthermore, moderately vigorous activity at 40–60 percent of maximal oxygen intake, such as 30–45 minutes of brisk walking four to five times per week, has been shown to decrease blood pressure. Although regular aerobic exercise has a positive impact on high blood pressure, it is considerably less effective than medication. In a randomized controlled trial, it was shown that even a short time (11 weeks) of daily yoga practice at 1 hour per day is as beneficial as pharmacological treatment in lowering blood pressure in hypertensive patients. Yoga, like calisthenic exercise, has been shown to have a compelling antihypertensive impact when combined with relaxation, biofeedback, transcendental meditation, and psychotherapy **[6]–[8].**

Yoga's positive benefits on autonomic neurological function may be the mechanism behind its blood pressure-lowering effects. Impaired baroreflex sensitivity is increasingly being proposed as one of the main causes of essential hypertension. Yoga poses have been proven to help restore baroreflex sensitivity. In this case, yogic asanas that are comparable to a head-up or head-down tilt have been shown to be especially helpful. A battery of tests, including cold pressor reaction at 41C water (CPR), alpha index of EEG (AI), blood catecholamines (CA), and plasma renin activity, were used to test and show that three weeks of particular yogic posture may bring about substantial autonomic readjustments (PRA). Yoga practice resulted in a gradual decrease in sympatho-adrenal and renin–angiotensin activity, according to these studies. The restoration of baroreceptor sensitivity induced by yoga practice resulted in a substantial decrease in blood pressure in patients who engaged in yoga activity.

Yoga has been shown to be effective in the management of secondary cardiac problems caused by persistent hypertension. Chronic hypertension-induced left ventricular hypertrophy is a predictor of a number of chronic cardiac problems, including myocardial ischaemia, congestive heart failure, and diastolic dysfunction. Head-down-body-up posture exercise (Sarvangasana) has been found to be especially helpful in preventing and treating hypertension-related left ventricular hypertrophy and diastolic dysfunction. In one research, practicing sarvangasana (one of the three most well-known asanas) for two weeks substantially reduced resting heart rate and left ventricular end diastolic volume. In addition, as shown by echocardiography, there was a little reduction in left ventricular mass.

1.4.2. Serum lipid profile and body weight:

Ischemic heart disease is linked to obesity, which is a significant independent risk factor. Other than age, weight has the greatest independent connection with the risk of hypertension. Weight loss has proven to be a difficult and sometimes fruitless endeavor for many individuals. Yoga has been shown to be very beneficial in the treatment of obesity. A year of yoga practice resulted in substantial increases in optimum body weight and body density, according to a randomized controlled research.

Participants in another research demonstrated substantial decreases in body mass index, total serum and LDL cholesterol, and fibrinogen in those with high levels after participating in a complete residential 3-month yoga and meditation training program. Yoga has been found to enhance blood lipid profiles in both individuals with established ischemic heart disease and healthy participants when practiced regularly.

Because asana practice does not result in increased, fast big muscular activity and energy production, the mechanism of yoga's positive impact in the treatment of hyperlipidemia and obesity cannot be described by simply extra caloric expenditure. Yoga's effectiveness in the treatment of hyperlipidemia and obesity, on the other hand, is significant **[9], [10].**

1.4.3. Intrinsic adverse neurohormonal activity:

Increased intrinsic neurohormonal activity has been linked to an increased risk of heart attack and stroke. This may explain why life's overall stress leads to a higher risk of cardiac disease. Specific indicators in serum and urine may be used to assess the level of unfavorable neurohormonal activity. Regular yoga asana practitioners showed a significant reduction in markers of intrinsic neurohormonal activity such as urinary excretion of adrenaline, noradrenaline, dopamine, aldosterone, and serum testosterone and luteinizing hormone levels, as well as serum testosterone and luteinizing hormone levels. They also found an increase in cortisol excretion in the urine in one experiment. Reduced sympathetic activity was associated with decreased heart rate, skin conductance, oxygen consumption, and increased breath volume - clinical indicators of neurohormonal activity aiding protection against ischemic heart disease and myocardial infarction.

1.4.4. Diabetes Mellitus:

Yoga has been proven to be a simple and cost-effective treatment technique that may be used as an adjuvant therapy for NIDDM patients. There was a substantial decrease in the frequency of hyperglycemia and the area index total under the oral glucose tolerance test curve in a group of diabetics who practiced yoga on a regular basis. The requirement for oral hypoglycemics to maintain sufficient blood sugar control was also reduced in the group who practiced yoga, according to this experimental research. The mechanism of yoga exercise's antiglycaemic effect has yet to be discovered. It's still possible that insulin and glucagon activities have a role in neurohormonal regulation.

Although no scientific studies highlighting the impact of yoga in the management of cigarette smoking were identified in the literature review, the psychological calming effect of yoga may be helpful in this respect. There is a clear need for randomized research to investigate into the positive benefits of yoga as a smoking cessation aid, if any exist.

1.4.5. Prevention of coronary artery disease via a yoga lifestyle intervention:

Patients with angiographically confirmed coronary artery disease who practiced yoga exercise for a year had fewer anginal episodes per week, increased exercise capacity, and lost weight, according to a randomized controlled trial. In comparison to control groups, serum cholesterol levels (total cholesterol, LDL cholesterol, and triglyceride levels) exhibited higher decreases. In the yoga group, revascularization operations were used less often. One-year follow-up angiography revealed that the yoga group had substantially more lesions retreat (20% vs. 2%) and much fewer lesions advance (5% vs. 37%) than the control group. As a result, yoga practice promotes atherosclerotic regression and slows development in individuals with severe coronary artery disease. However, the mechanism of yoga's impact on atherosclerotic plaques is still being researched. Yoga seems to provide comparable lipid-lowering and plaque-stabilizing benefits as statin medications (HMG CoA reductase inhibitors). It's crucial to conduct biochemical and immunological research among yoga practitioners to determine whether it has comparable mechanisms of action as statins, which have beneficial effects on atherosclerosis and vascular characteristics other than cholesterol reduction. Statin action is linked to an increase in nitric oxide generation in the vascular endothelium, which has local vasodilator characteristics as well as anti-atherogenic, antiproliferative, and leukocyte adhesion-inhibitory capabilities. Endothelin-1, a strong vasoconstrictor and mitogen, is known to promote endothelium-dependent relaxation, decrease platelet function, and reduce the action of endothelin-1. Inflammatory cytokines are also reduced by statins. There may be some similarities between the pharmaco-physiological effects of statin treatment and the internal changes brought about by yoga practice. Yoga practice may cause a shift in the internal environment that is mediated by a neurohormonal mechanism.

2. DISCUSSION

Yoga has been proven to aid in the recovery of those who have had a myocardial infarction. It has improved sleep, appetite, and overall well-being in patients, as well as lowered physiological arousal.

Yoga's potential to enhance patients' functional capability may be beneficial in the post-myocardial infarction rehabilitation process. Subjects who practiced pranayama, or regulated yogic breathing, were able to accomplish greater work rates while using less oxygen per unit of labor and having lower blood lactate levels. This finding held true in both submaximal and maximum activity. At rest, their blood lactate levels were likewise abnormally low. Another research supported the previous findings by showing substantial increases in cardiovascular endurance and anaerobic power after a year of yoga practice. In healthy young males, one hour of yogic exercise per day for six months resulted in an increase in maximum oxygen consumption (VO2max) and substantial increases in effort tolerance. The benefits of practicing yogic postures on a regular basis were considerably greater than the benefits of traditional calisthenic exercise training. Oxygen intake, carbon dioxide output, pulmonary ventilation, respiratory rate, pulse rate, and the subjective exertion score were all assessed physiologically. When compared to those who did conventional exercise, yoga practitioners showed a reduced felt effort following maximum activity. Although these results come from young healthy people, they are likely to be relevant to postmyocardial infarction patients, at least to a lower extent.

The evidence for yoga's positive benefits on cardiac patients is overwhelming. Yoga's function in cardiac patient treatment, on the other hand, should be seen as a supplement to the scientifically established traditional modalities of comprehensive cardiac care. In post-myocardial infarction

patients, basic yoga practice including simple postures, relaxation exercises, and respiratory exercise coupled with conventional medication and physiotherapy demonstrated better clinical advantages over those who did not practice yoga. Exercise tolerance and psychosomatic conditioning were also improved as a result of these advantages.

Excess sympathetic activation has become a key component in the treatment of both ischemic heart disease and congestive heart failure. Through pharmaceutical methods, beta-blocker treatment offers this capability. Yoga has also been found to be able to regulate sympathetic overdrive, simulating beta blockage. Despite a lack of increase in minute breathing, yogic practitioners subjected to acute hypoxia under experimental circumstances were able to sustain higher oxygen saturation than controls. During such hypoxia, their sympathetic activity was reduced. Yoga trainees' partly sustained oxygen saturation under hypoxia is thought to be related to the more efficient style of breathing associated with yogic practice. Yoga breathing's physiological adjustments may be beneficial in the treatment of individuals with cardiovascular illnesses, especially ischemic heart disease and chronic heart failure. The significance of sympathetic activation related to respiratory failure in cardiovascular disease and hypertension is now well understood. Improved breathing methods used in yoga practice may help to alleviate the persistent hypoxia caused by chronic heart failure. Dyspnoea and exercise capacity may both be improved by strengthening respiratory muscles. Similarly, in hypertension, where sympathetic activation has been related to altered breathing patterns and increased chemoreflex activity, the reduction in sympathetic activity observed with slow breathing may be helpful.

3. CONCLUSION

Yoga, for example, combines prolonged physical exertion with inwardly focused concentration, resulting in a brief state of self-contemplation. Yoga, for example, has been proven to offer substantial mental and physical benefits. It is possible that yoga practice activates neurohormonal processes that result in health advantages. As previously mentioned, the reduction of sympathetic activity linked with yoga practice demonstrates this. However, more focused scientific research is needed to clarify the effects and processes of yoga on the human body in health and illness. Given the scientific data shown so far, it is reasonable to infer that yoga may aid in the primary and secondary prevention of cardiovascular disease, and that it can serve as a main or secondary preventive tool. In cardiac rehabilitation circles, there is a lot of excitement for incorporating alternative types of exercise treatment, such as yoga, into the standard practice. Infrastructure, experience, and money seem to be the biggest roadblocks to change implementation. As a result, more research into the benefits of complementary physical exercise modalities such as yoga is needed at leading rehabilitation centers, as well as a push for more funding, once there is unequivocal evidence of the benefits of its incorporation into mainstream post- and pre-event cardiac rehabilitation.

REFERENCES:

1. McCall TB. Yoga vs. yoga therapy. Yoga J., 2004.

2. Salagame K K. Psychology of yoga and yoga psychology. P.Nikic, 2011.

3. Kumar G. The fourfold yoga - Yoga therapy. JOY J. Yoga, 2004.

4. Markula P. Reading Yoga: Changing Discourses of Postural Yoga on the Yoga Journal

Covers. Commun. Sport, 2014;2(2):143-171. doi: 10.1177/2167479513490673.

5. Criswell E. Yoga and Mind-Body Medicine. In I. Serlin, K. Rockefeller, and S. S.. Brown (Eds.) Whole Person Healthcare (Volume 2) Psychology, spirituality, and health., 2007.

6. Zou L. et al. Effects of Mind–Body Exercises (Tai Chi/Yoga) on Heart Rate Variability Parameters and Perceived Stress: A Systematic Review with Meta-Analysis of Randomized Controlled Trials. J. Clin. Med., 2018 Oct 31;7(11):404. doi: 10.3390/jcm7110404.

7. Frayeh AL, Lewis B.A. The effect of mirrors on women's state body image responses to yoga. Psychol. Sport Exerc., 2018; 35: 47-54. doi: 10.1016/j.psychsport.2017.11.002.

8. Köksoy S, Eti CM, Karataş M, Vayisoglu Y. The effects of yoga in patients suffering from subjective tinnitus. Int. Arch. Otorhinolaryngol., 2018, doi: 10.1055/s-0037-1601415.

9. Doddoli S, Shete S, Kulkarni D, Bhogal R. Effect of yoga training on lipid metabolism in industrial workers with reference to body constitution (Prakriti). J. Tradit. Complement. Med., 2017 Jul; 7(3): 322–326. doi: 10.1016/j.jtcme.2016.08.001.