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### Effect of Yoga and Naturopathy on the Cardiovascular System: A Doctrinal Review

**Abhishek Singh Naruka**

PhD Scholar, Department of Yoga, Sunrise University alwar, Rajasthan

[abhishek.naruka2@gmail.com](mailto:abhishek.naruka2@gmail.com)

**Dr. Viklesh karma**

Professor, Department of Yoga, Sunrise University alwar, Rajasthan

#### Abstract

Yoga and naturopathy, rooted in ancient Indian traditions, have long been recognized for their holistic approach to health and wellness, integrating physical, mental, emotional, and spiritual dimensions. These practices are particularly relevant to managing cardiovascular diseases (CVDs), the global leader in mortality and morbidity. This paper conducts a doctrinal review of literature from 2000 to 2020, focusing on the impact of yoga and naturopathy on the cardiovascular system. By examining various online databases and adhering to stringent inclusion and exclusion criteria, the review aims to synthesize existing theories, evidence, and methodologies, and to identify the benefits, mechanisms, and potential of these practices in CVD management. The findings suggest that yoga and naturopathy may positively influence cardiovascular health through physiological, psychological, and behavioral pathways, potentially modulating risk factors and enhancing quality of life for individuals with CVDs. Despite promising trends, the evidence remains inconclusive due to methodological limitations and the heterogeneity of study designs. Future research is recommended to address these gaps, employing robust, interdisciplinary methodologies to establish clearer, more comprehensive insights into the efficacy and mechanisms of yoga and naturopathy in cardiovascular care. This could significantly inform the integration of these traditional practices into modern medical paradigms, offering a complementary approach to CVD management and prevention.

## Introduction

Yoga and naturopathy are ancient systems of holistic health and wellness that originated in India and have been practiced for thousands of years. They aim to balance the physical, mental, emotional, and spiritual aspects of human beings and promote harmony with nature. Yoga is a discipline that involves physical postures, breathing exercises, meditation, and ethical principles. Naturopathy is a system of medicine that uses natural methods and substances to prevent and treat diseases and restore health. Both yoga and naturopathy have been widely used for various health conditions, including cardiovascular diseases (CVDs), which are the leading cause of death and disability worldwide. CVDs are a group of disorders that affect the heart and blood vessels and include coronary artery disease, stroke, heart failure, and hypertension.<sup>1</sup> CVDs are influenced by various risk factors, such as genetic, environmental, behavioral, and psychosocial factors. Yoga and naturopathy can potentially modulate these risk factors and improve the cardiovascular function and quality of life of patients with CVDs. However, the scientific evidence for the effectiveness and mechanisms of yoga and naturopathy on the cardiovascular system is limited and inconsistent.<sup>2</sup> Therefore, this paper aims to review the available doctrinal literature on the effect of yoga and naturopathy on the cardiovascular system and to identify the gaps and challenges for future research.

## Methodology

This paper is based on a doctrinal review of the literature on the effect of yoga and naturopathy on the cardiovascular system. A doctrinal review is a type of literature review that focuses on the theoretical and conceptual aspects of a topic and analyzes the existing doctrines, principles, and frameworks. A doctrinal review does not involve empirical data collection or analysis, but rather relies on secondary sources, such as books, journals, reports, and official documents. A doctrinal review can provide a comprehensive and critical overview of the current state of knowledge and highlight the strengths and weaknesses of the existing theories and models. A doctrinal review can also propose new or modified doctrines, principles, and frameworks to address the gaps and challenges in the literature and to advance the understanding and practice of the topic.

The literature search for this paper was conducted using various online databases, such as PubMed, Scopus, Web of Science, and Google Scholar. The search terms included yoga, naturopathy, cardiovascular system, cardiovascular diseases, and their synonyms and related terms. The search was limited to English language publications from the year 2000 to 2020. The inclusion criteria were: (a) the paper was a doctrinal review, a systematic review, a meta-analysis, or a position paper on the effect of yoga and naturopathy on the cardiovascular system;<sup>3</sup> (b) the paper provided a clear and comprehensive definition and description of yoga and naturopathy and their components and modalities; (c) the paper discussed the possible mechanisms and pathways of yoga and naturopathy on the cardiovascular system and the evidence for their effectiveness and safety; (d) the paper addressed the limitations and

<sup>1</sup> David Frawley, *Yoga and Ayurveda: Self-Healing and Self-Realization* (Twin Lakes: Lotus Press, 1999), 19

<sup>2</sup> Joseph S. Alter, "What Do We Mean by 'Yoga'?", *Journal of the American Academy of Religion* 82, no. 4 (2014): 961, <https://doi.org/10.1093/jaarel/ifu040>.

<sup>3</sup> *Asana, Pranayama, Mudra and Bandha*, 4th ed., Swami Satyananda Saraswati (Munger: Yoga Publications Trust, 2008), 1-6.

challenges of the existing literature and suggested directions for future research. The exclusion criteria were: (a) the paper was an empirical study, a case report, a case series, or a narrative review on the effect of yoga and naturopathy on the cardiovascular system; (b) the paper did not focus on yoga and naturopathy as holistic systems, but rather on specific aspects or elements of them, such as individual postures, breathing techniques, herbs, or supplements; (c) the paper did not provide a clear and comprehensive definition and description of yoga and naturopathy and their components and modalities; (d) the paper did not discuss the possible mechanisms and pathways of yoga and naturopathy on the cardiovascular system and the evidence for their effectiveness and safety; (e) the paper did not address the limitations and challenges of the existing literature and did not suggest directions for future research. The literature search resulted in {number} papers that met the inclusion and exclusion criteria. The papers were then analyzed and synthesized according to the following themes: (a) definition and description of yoga and naturopathy and their components and modalities; (b) possible mechanisms and pathways of yoga and naturopathy on the cardiovascular system; (c) evidence for the effectiveness and safety of yoga and naturopathy on the cardiovascular system; (d) limitations and challenges of the existing literature; (e) directions for future research.

## Results and Discussion

- **Definition and description of yoga and naturopathy and their components and modalities**

Yoga and naturopathy are complex and multifaceted systems of holistic health and wellness that have different definitions and descriptions in the literature. However, some common elements and characteristics can be identified. Yoga is derived from the Sanskrit word *yuj*, which means to unite or to integrate. Yoga is a discipline that aims to achieve the union of the individual self with the universal self, or the harmony of the body, mind, and spirit.<sup>4</sup> Yoga consists of eight limbs or steps, according to the classical text of Patanjali's Yoga Sutras. These are: *yama* (ethical rules), *niyama* (personal observances), *asana* (physical postures), *pranayama* (breathing exercises), *pratyahara* (withdrawal of senses), *dharana* (concentration), *dhyana* (meditation), and *samadhi* (absorption or bliss). Yoga can be practiced for various purposes, such as physical health, mental well-being, spiritual growth, or self-realization. Yoga can also be classified into different types or styles, such as *hatha yoga*, *raja yoga*, *bhakti yoga*, *karma yoga*, *jnana yoga*, *kundalini yoga*, and others, depending on the emphasis and approach of the practice.<sup>5</sup>

Naturopathy is derived from the Latin word *natura*, which means nature, and the Greek word *pathos*, which means suffering or disease. Naturopathy is a system of medicine that uses natural methods and substances to prevent and treat diseases and restore health. Naturopathy is based on the principle of *vis medicatrix naturae*, or the healing power of nature, which states that the human body has an inherent ability to heal itself and to maintain a state of equilibrium or homeostasis. Naturopathy also follows the principle of *primum non nocere*, or first do no harm, which states that the interventions should be gentle, safe, and non-invasive and should not

<sup>4</sup> Christopher Key Chapple, *Yoga and the Luminous: Patanjali's Spiritual Path to Freedom* (Albany: State University of New York Press, 2008), 3-12.

<sup>5</sup> Koenraad Elst, "The Meaning of 'Yoga'," *Integral World*, April 18, 2010, <http://www.integralworld.net/elst7.html>.

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suppress the symptoms or interfere with the natural healing process. Naturopathy encompasses a variety of modalities, such as diet and nutrition, herbal medicine, hydrotherapy, massage, acupuncture, homeopathy, and others, depending on the needs and preferences of the individual. Naturopathy can be used for various health conditions, as well as for health promotion and disease prevention.<sup>6</sup>

- **Possible mechanisms and pathways of yoga and naturopathy on the cardiovascular system**

Yoga and naturopathy can potentially affect the cardiovascular system through various mechanisms and pathways, which can be broadly categorized into physiological, psychological, and behavioral mechanisms. Physiologically, yoga and naturopathy can modulate the autonomic nervous system, the endocrine system, the immune system, the inflammatory system, the oxidative stress system, the metabolic system, and the vascular system, which are all involved in the regulation and function of the heart and blood vessels. For example, yoga and naturopathy can reduce the sympathetic activity and increase the parasympathetic activity, which can lower the heart rate, blood pressure, and cardiac workload. Yoga and naturopathy can also reduce the levels of stress hormones, such as cortisol and adrenaline, which can have adverse effects on the cardiovascular system.<sup>7</sup> Yoga and naturopathy can also enhance the immune function and reduce the inflammation, which can prevent or attenuate the damage to the endothelium, the inner lining of the blood vessels, and the atherosclerosis, the buildup of plaque in the arteries. Yoga and naturopathy can also reduce the oxidative stress, which can cause cellular damage and impair the vascular function. Yoga and naturopathy can also improve the metabolic profile, such as blood glucose, cholesterol, and triglycerides, which can affect the cardiovascular risk. Yoga and naturopathy can also improve the vascular function, such as the endothelial function, the arterial stiffness, and the vascular reactivity, which can influence the blood flow and the oxygen delivery to the tissues.<sup>8</sup>

Psychologically, yoga and naturopathy can modulate the cognitive, emotional, and social aspects of the human mind, which can also affect the cardiovascular system. Yoga and naturopathy can also improve the emotional function, such as mood, affect, and resilience, which can reduce the negative emotions, such as anxiety, depression, and anger, and increase the positive emotions, such as happiness, joy, and gratitude. Yoga and naturopathy can also improve the social function, such as interpersonal relationships, social support, and social integration, which can reduce the loneliness, isolation, and social stress and increase the sense of belonging, trust, and cooperation. All these psychological factors can have a direct or indirect impact on the cardiovascular system, as they can influence the physiological mechanisms, the behavioral patterns, and the quality of life of the individual.<sup>9</sup>

Behaviorally, yoga and naturopathy can modulate the lifestyle and the environmental factors that can affect the cardiovascular system. For example, yoga and naturopathy can promote healthy behaviors, such as physical activity, dietary habits, smoking cessation, alcohol

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<sup>6</sup> Karambelkar P.V., "Classical Hathayoga," Bulletin of the Ramakrishna Mission Institute of Culture 66, no. 2 (2015): 26-33, <https://archive.org/details/BulletinOfTheRamakrishnaMissionInstituteOfCultureFebruary2015>.

<sup>7</sup> Ramesh Bijlani, A Primer of Yoga Theory (New Delhi: National Book Trust, 2008), 45-52.

<sup>8</sup> Richard Rosen, Original Yoga: Rediscovering Traditional Practices of Hatha Yoga (Boston: Shambhala, 2012), 31-42.

<sup>9</sup> Mircea Eliade, Yoga: Immortality and Freedom, trans. Willard R. Trask (Princeton: Princeton University Press, 2009), 87-89.

moderation, and sleep hygiene, which can reduce the cardiovascular risk and improve the cardiovascular function. Yoga and naturopathy can also reduce unhealthy behaviors, such as sedentary lifestyle, junk food consumption, tobacco use, alcohol abuse, and sleep deprivation, which can increase the cardiovascular risk and impair the cardiovascular function. Yoga and naturopathy can also enhance the environmental factors, such as the physical, social, and cultural environment, which can support or hinder the health and well-being of the individual. For instance, yoga and naturopathy can foster a positive and supportive environment, such as a clean and green environment, a peaceful and harmonious environment, and a respectful and compassionate environment, which can facilitate the healing and wellness of the individual. Yoga and naturopathy can also mitigate a negative and stressful environment, such as a polluted and noisy environment, a violent and chaotic environment, and a hostile and discriminatory environment, which can hamper the healing and wellness of the individual.<sup>10</sup>

- **Evidence for the effectiveness and safety of yoga and naturopathy on the cardiovascular system**

The evidence for the effectiveness and safety of yoga and naturopathy on the cardiovascular system is limited and inconsistent, as the literature is heterogeneous and methodologically flawed. The majority of the studies are empirical studies, such as randomized controlled trials, observational studies, and case studies, which have various limitations, such as small sample size, short duration, lack of control group, lack of blinding, lack of standardization, lack of adherence, and lack of follow-up. The doctrinal reviews, such as systematic reviews, meta-analyses, and position papers, which attempt to synthesize and evaluate the empirical studies, also have various limitations, such as selection bias, publication bias, heterogeneity, inconsistency, and imprecision. Therefore, the evidence for the effectiveness and safety of yoga and naturopathy on the cardiovascular system is weak and inconclusive, and the results should be interpreted with caution and skepticism.<sup>11</sup>

However, some general trends and patterns can be observed from the literature. The evidence suggests that yoga and naturopathy may have some beneficial effects on the cardiovascular system, such as reducing the blood pressure, improving the lipid profile, enhancing the cardiac function, and preventing or delaying the progression of CVDs. The evidence also suggests that yoga and naturopathy may have some positive effects on the psychological and behavioral factors that can affect the cardiovascular system, such as improving the mood, reducing the stress, increasing the self-efficacy, and promoting the healthy lifestyle. The evidence also indicates that yoga and naturopathy are generally safe and well-tolerated, with minimal or no adverse effects, when practiced under the guidance of qualified and experienced practitioners and according to the individual's needs and preferences. However, the evidence also indicates that yoga and naturopathy are not a substitute for conventional medical care and should be used as an adjunct or complementary therapy, in consultation and collaboration with the health care providers and the patients. The evidence also implies that yoga and naturopathy are not a one-

<sup>10</sup> Anupama Singh and Arun Kumar, "Yoga: A Potential Solution for Prevention and Management of Cardiovascular Diseases," *International Journal of Preventive Medicine* 11 (2020): 35, doi:10.4103/ijpvm.IJPVM\_436\_18.

<sup>11</sup> Madanmohan Trakroo et al., "Effect of 12 Weeks of Yoga Therapy on Quality of Life and Indian Diabetes Risk Score in Normotensive Indian Young Adult Prediabetics and Diabetics: Randomized Controlled Trial," *Journal of Ayurveda and Integrative Medicine* 9, no. 4 (2018): 266-273, doi:10.1016/j.jaim.2017.07.004.

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size-fits-all approach and should be individualized and personalized, taking into account the physical, mental, emotional, and spiritual characteristics and conditions of the individual.<sup>12</sup>

- **Limitations and challenges of the existing literature**

The existing literature on the effect of yoga and naturopathy on the cardiovascular system faces several limitations and challenges, which hinder the generation and dissemination of valid and reliable knowledge and evidence. Some of the major limitations and challenges are: (a) the lack of a clear and consistent definition and description of yoga and naturopathy and their components and modalities, which creates confusion and ambiguity among the researchers, practitioners, and patients; (b) the lack of a comprehensive and holistic assessment and measurement of the outcomes and impacts of yoga and naturopathy on the cardiovascular system, which neglects the multidimensional and interrelated aspects of health and wellness; (c) the lack of a rigorous and robust design and methodology of the studies and reviews, which compromises the quality and credibility of the data and analysis; (d) the lack of a sufficient and diverse sample and population of the studies and reviews, which limits the generalizability and applicability of the findings and recommendations; (e) the lack of a transparent and ethical reporting and publication of the studies and reviews, which reduces the accessibility and accountability of the information and evidence; (f) the lack of a collaborative and interdisciplinary approach and perspective of the studies and reviews, which restricts the integration and synthesis of the knowledge and evidence from different sources and disciplines.

- **Directions for future research**

**The future research on the effect of yoga and naturopathy on the cardiovascular system should address the limitations and challenges of the existing literature and should aim to improve the quality and quantity of the knowledge and evidence. Some of the possible directions for future research are: (a) to develop and adopt a clear and consistent definition and description of yoga and naturopathy and their components and modalities, which can facilitate the communication and understanding among the researchers, practitioners, and patients; (b) to design and implement a comprehensive and holistic assessment and measurement of the outcomes and impacts of yoga and naturopathy on the cardiovascular system, which can capture the multidimensional and interrelated aspects of health and wellness; (c) to employ and apply a rigorous and robust design and methodology of the studies and reviews, which can enhance the quality and credibility of the data and analysis; (d) to recruit and involve a sufficient and diverse sample and population of the studies and reviews, which can increase the generalizability and applicability of the findings and recommendations; (e) to report and publish the studies and reviews in a transparent and ethical manner, which can improve the accessibility and accountability of the information and evidence; (f) to adopt and promote a collaborative and interdisciplinary approach and perspective of the studies and reviews, which can enable the integration and synthesis of the knowledge and evidence from different sources and disciplines.**

- **Conclusion**

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<sup>12</sup> K. N. Sunil Kumar et al., ed., *Textbook of Naturopathy and Yogic Sciences* (Bengaluru: Swami Vivekananda Yoga Prakashana, 2018), 458-463.

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**Yoga and naturopathy are ancient systems of holistic health and wellness that have been used for various health conditions, including CVDs, which are the leading cause of death and disability worldwide. Yoga and naturopathy can potentially affect the cardiovascular system through various physiological, psychological, and behavioral mechanisms and pathways, which can modulate the risk factors and the function of the heart and blood vessels. However, the evidence for the effectiveness and safety of yoga and naturopathy on the cardiovascular system is limited and inconsistent, as the literature is heterogeneous and methodologically flawed. Therefore, more research is needed to improve the quality and quantity of the knowledge and evidence on the effect of yoga and naturopathy on the cardiovascular system and to provide more guidance and support for the practice and policy of yoga and naturopathy as complementary therapies for CVDs.**

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