Yoga therapy for cardiac rehabilitation

Khatri Deepika¹
Tyravska Yuliy²

¹ Vth year student; BAU International University; Georgia
² PhD in Medicine, Assistant Professor; Internal Medicine #4 department, Bogomolets National Medical University; Ukraine

Abstract.
Rehabilitation by yoga is not less than sundry as its emerging benefits are making everyone wonder of its endless uses that are getting added more and more as each day passes. This small review elucidates aspects of yoga in cardiac rehabilitation.

Keywords:
yoga therapy
rehabilitation
cardiovascular diseases
MEDICINE AND PHARMACY

Introduction

According to World Health Organisation rehabilitation comprises a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions, in interaction with their environment [1]. Rehabilitation basically means something that can help a person get back to normal routine in their daily life, it can be some kind of healthy habits or exercises, breathing techniques or any other mode of therapy.

Cardiovascular disorders (CVD) rank not only the first place among the reasons of mortality worldwide, moreover, these diseases are responsible for the greatest number of healthy life-years lost [2]. Consequently, the patients after cardiovascular events are the largest group needs long-term systemic well-balanced approach for rehabilitation. Increased rates of morbidity and mortality have forced us to think about any other alternatives for the implementation of secondary prevention interventions [3].

Cardiac rehabilitation (CR) is a broad program involving evaluation of patients’ risk factor reduction by interconnected intervention, involving physical exercise and activity, side by side providing education to optimisation for healthy lifestyle habits, smoking cessation, proper nutritional care to improve the physical capacity along with psychological status of cardiac patients involving easy physical activities, controlling lipid profile, weight normalisation [3]. Some people hire family physicians for rehabilitation whereas others manage it by coordinating with hospital staff [4]. Unfortunately, there is lack of awareness to certain risk factors including reduced ejection fraction, current smoking status, less knowledge among persons about how hazardous this can turn out to be if not taken care of. At the same time, CR not only reduces mortality, subsides symptoms, helps in smoking cessation but also improves exercise tolerance, and helps in overall psychosocial wellbeing [5]. There is certain evidence that supports CR as one of the cost-effective interventions for secondary prevention in patients with any CVD including after acute coronary syndrome, after coronary revascularization or with heart failure with reduced ejection fraction [6].
As yoga in simple language comprises a combination of physical postures (asana), breathing exercises (pranayama), and meditation (dhyana), and is a form of mind-body exercise, it is believed to be useful in rehabilitation programs concerning various disorders, including CVD [7].

This article is aimed to find out the effects of yoga on cardiovascular system while CR. The literature search was conducted from 2012 till August 2022 in databases Google Scholar and PubMed.

Main part

After certain experiments it was defined the beneficial role of yoga for secondary prevention of myocardial infarction (MI). One of the experiments was conducted by Christa E. et al. regarding heart rate variability while CR of 80 patients after myocardial infarction excluding high risk patients. After 12 weeks of yoga training program it was proved that yoga therapy had additive effect in shifting sympathovagal balance towards parasympathetic predominance while increasing overall heart rate variability in optimally medicated post MI patients [8]. It corresponds with other researches that revealed beneficial yoga influence on physical and mental health via down-regulation of hypothalamic-pituitary-adrenal axis and the sympathetic nervous system [9]. Prabhakaran D. et al. after 6 months yoga care program with 22 postmyocardial infarction patients concluded that yoga care helped patients to return to pre infarct activities [10]. Besides CR after MI in 2017 Lawrence M. et al. registered positive yoga effect on 72 patients after stroke in comparison with waiting list control or no intervention in control. Even more, it was concluded that yoga can be included in patients' stroke rehabilitation [11]. Furthermore, in 2019 Chandrasekaran A. et al. provided CR yoga care program for 12 weeks following acute MI in randomisations 1:1 in the population of age group from 18 to 80 years. Conclusion came out to be that yoga care is found to be effective, it has that potential which can save millions of lives by implementing it in their routines [12]. This survey corresponds to Prabhakaran D. et al. results. In addition, both investigational groups concluded that yoga is helpful in preinfarct activities [10,12]. Another survey was conducted
for cardiac rehabilitation of post-myocardial infarction patients with left ventricular dysfunction. Majority of the experts agreed with the duration of 1 h training for 1 month which was done under supervision and developed a yoga module that was found to be acceptable [13]. Further randomized control trials are necessary to authenticate the effectiveness of this module and if the module proves to be effective by clinical studies. It may add a therapeutic option in the rehabilitation of patients with heart failure following MI, which can be applied in the hospitals and community level. So, there are unlimited possibilities of yoga that can turn into huge reality if proved under certain clinical trials and randomised controlled trials.

All these surveys gave rise to another important question: can yoga play a role in cardiopulmonary rehabilitation. In order to get answer to such questions in 2020 Grabara M. et al. tried to find the effects of Hatha yoga on cardiac hemodynamic parameter and physical capacity in CR. It was enrolled 70 patients for 24 days of age group 45-65 years specially males. The improvement of left ventricular end diastolic diameter, left ventricular end systolic diameter and heart rate over time was registered. Moreover, it was noted better effectiveness in the CR program with a modified hatha yoga training program. Hatha yoga training was concluded to be recommended as an complementary to standard CR [14]. Besides role of Hatha yoga in CR, Lin PJ et al. suggests that gentle Hatha and Restorative-based yoga therapy performed 2 to 3 times per week at a moderate intensity over 4 weeks (728 minutes total) is effective for treating cancer related fatigue in cancer survivors as it helps them in reducing their nap time, feel less sleepy, feel more energized, and be more active during the day. Biggest hurdle in recovery was the nap time and energy so yoga proved to improve these issues as a result cancer survivor can develop proper daytime and nighttime sleep schedule further getting one step closer to their recovery process [15].

It’s not that all these innovative ideas regarding role of yoga in rehabilitation process of certain disorders came to people’s head this decade but it’s been somewhere with them since a long time when all this journey of effects of
yoga in rehabilitation process started. This reminds us one of another survey conducted by Raghuram N. et al. about CR of patients after coronary artery bypass surgery. 250 patients of age around 35-65 years especially male were enrolled for a period of 1 year. It was noted that yoga group had better physical tolerance improvement, reduction in BMI and blood glucose level. Addition of yoga based cardiac relaxation to conventional post - CABG CR helps in better management of risk factors in those with abnormal baseline values and may help in preventing recurrence [16]. Hatha yoga was found to be more effective in comparison with others, consequently it is worth of a lot of attention. Rachiwong S. et al. worked on effects of modified Hatha yoga in industrial rehabilitation on physical fitness and stress of injured workers. He enrolled 18 patients for 8 weeks of age group 18-55 years and considered both males as well as females for this. Therapeutic effects on physical fitness variables including flexibility of lower back, hand grip strength and vital capacity but not on stress level in injured workers were noted. Important conclusion was made that Hatha yoga can be beneficial add on to routine physical therapy treatment in industrial rehabilitation programs [17].

However, there are some studies with contradictory results. One such study is small UK-based randomised mechanistic study, with 60 completing participants of whom 25 were in the yoga + usual care group. No marked improvement associated with the addition of a structured 3-month yoga intervention to usual CR care in key cardiovascular and neuroendocrine measures were registered [18]. Another such example is the role of yoga therapy in chronic heart failure (CHF). According to meta-analysis the use of yoga in CR of patients with CHF remains controversial. The results suggested that yoga compared with control had a positive impact on peak VO2 and health-related quality of life. However, larger RCTs are required to further investigate the effects of yoga in patients with CHF. This was still a key idea about yoga therapy role in rehabilitation process of cardiac problems in patients with CHF [19].

Along with managing symptoms yoga improves emotional health and certain important biomarkers, such as stress
hormone regulation, immune function, and inflammatory markers [20].

Yogic breathing is defined as a unique trick of movement of breath, that have positive effect on immune function, autonomic nervous system imbalances, and psychological or stress-related disorders. Sudarshan kriya yoga (SKY) is one of the most reliable yogic breathing in which different types of cyclical breathing patterns are performed ranging from slow and calming to rapid and stimulating [21]. SKY can alleviate anxiety, depression, everyday stress, post-traumatic stress, and stress-related medical illnesses. Mechanisms contributing to a state of calm alertness include increased parasympathetic drive, calming of stress response systems, neuroendocrine release of hormones, and thalamic generators [22]. SKY causes vagus nerve stimulation and exerts numerous autonomic effects including changes in heart rate, sequential breath variations in lengths, intensities, frequencies along with end-inspiratory and end-expiratory holds generate diverse stimuli from baroreceptors, sensory receptors, and multiple visceral afferents which further affect diverse group of fibres within the vagus nerve resulting in physiological changes in various parts of the brain, such as thalamus, cortical areas, and limbic system, and they also affect multiple organs and glands. Vagal stimulation increases parasympathetic dominance resulting in increased normal respiratory sinus arrhythmia (RSA). So, it could also be used in mental disorders, such as functional dyspepsia having low RSA [21]. SKY potentiates natural host immune defences that further prevents certain infections or certain severe diseases [23]. Shankar et al. found that the breathing exercises or yoga and/or pranayama are generally multi-component interventions. These techniques help in modifying breathing patterns to reduce hyperventilation further resulting in normalisation of CO2 level, reduction of bronchospasm and resulting breathlessness, decrease anxiety, improve immunological parameters, and endurance of the respiratory muscles [24].

The relationship between late-life depression and cardiovascular disease is complex which may be mediated by impairment in the autonomic control of the heart. Sahaj
Samadhi meditation (SSM) is a less well-known meditation technique that belongs to the ASTM (automatic self-transcending meditation) category. ASTM's coherent process calls for relaxed attention to a mantra and it’s not rocket science as it neither requires concentration nor sustained vigilant attention. This feature is what makes it different from other meditation categories [25].

Conclusion

On the basis of most of the studies conducted it can be concluded that yoga therapy is beneficial as well as multipurpose when it comes to CR. There can be lot of undiscovered facts or uses yoga technique. So, further studies are required to validate the efficacy of yoga on psychological and functional outcomes while CR. The constituents of yoga including asanas (physical postures), pranayama (regulated breathing) and meditation are generally applied for health benefits.

References:

HCR.0000000000000372


