Cardiac rehabilitation has been demonstrated to decrease the morbidity and mortality of cardiac patients. There is ample evidence available, and American and European guidelines recommend its use for both primary and secondary prevention of cardiovascular diseases. However, cardiac rehabilitation is a neglected field in India, despite the fact that there is a huge burden of cardiovascular disease in India. There are very few cardiac rehabilitation centers in our country and there is an urgent need to create more such centers, as this could have a huge impact on decreasing the burden of cardiovascular diseases in India. However, there are several barriers in implementing cardiac rehabilitation in India. There is an urgent need for awareness and cost-effective, simple cardiac rehabilitation techniques in India. This article provides several suggestions for overcoming the barriers.

**Introduction**

Cardiac rehabilitation is a medically supervised multidisciplinary program of exercise and education designed to assist patients with cardiovascular diseases to achieve optimal physical, psychological, and functional status. In 1993, World Health Organization defined cardiac rehabilitation as “The rehabilitation of cardiac patients is the sum of activities required to influence favorably the underlying cause of the disease, as well as to ensure the patients best possible physical, mental and social conditions so that they may, by their own efforts, preserve, or resume when lost, as normal a place as possible in the life of the community. Rehabilitation cannot be regarded as an isolated form of therapy, but must be integrated with the whole treatment, of which it forms only a facet.” This means that a cardiac rehabilitation program includes: education of the patient, modification of lifestyle, and exercise. However, in India, cardiac rehabilitation has been neglected due to various barriers.

**Key Words**

- Cardiac rehabilitation
- Cardiovascular disease

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**How to start exercise-based cardiac rehabilitation in India**

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*Department of Cardiac Rehabilitation, Sri Ganga Ram Hospital, New Delhi, India  
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**Abstract**

Cardiac rehabilitation has been demonstrated to decrease the morbidity and mortality of cardiac patients. There is ample evidence available, and American and European guidelines recommend its use for both primary and secondary prevention of cardiovascular diseases. However, cardiac rehabilitation is a neglected field in India, despite the fact that there is a huge burden of cardiovascular disease in India. There are very few cardiac rehabilitation centers in our country and there is an urgent need to create more such centers, as this could have a huge impact on decreasing the burden of cardiovascular diseases in India. However, there are several barriers in implementing cardiac rehabilitation in India. There is an urgent need for awareness and cost-effective, simple cardiac rehabilitation techniques in India. This article provides several suggestions for overcoming the barriers.

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cardiac rehabilitation program for those patients with recent myocardial infarction or acute coronary syndrome, chronic stable angina, or heart failure, or for those patients following coronary artery bypass surgery or percutaneous coronary intervention.

According to the European guidelines on cardiovascular disease prevention in clinical practice, all patients requiring hospitalization or invasive intervention after an acute ischemic event should participate in a cardiac rehabilitation program to improve prognosis by modifying lifestyle habits and increasing treatment adherence (Class IIa, LOE: B). According to these guidelines, there is Class I recommendation for all the individual components of cardiac rehabilitation, i.e., physical activity, smoking cessation, education, nutrition, and behavioral modification.

Who will benefit from the cardiac rehabilitation program?
The target population is the secondary prevention population, i.e., those patients with:

- An established heart disease who have had an event with hospitalization or other significant intervention
- An established heart disease who have not had an event or recent hospitalization

The primary prevention population not only includes those at high risk for future cardiovascular disease, but also those who have not yet been diagnosed with cardiovascular disease.

Exercise-based cardiac rehabilitation program: How to start

Cardiovascular diseases are the leading cause of death and disability in India. Moreover, mortality following an acute myocardial infarction is high, which may be due to gaps in secondary prevention in general and a lack of cardiac rehabilitation (CR) services in particular. Cardiac rehabilitation after intervention is a neglected field, despite evidence and guideline recommendations. Why physicians do not routinely refer patients to cardiac rehabilitation remains a vastly underutilized resource. Exercise-based cardiac rehabilitation can be easily started in any existing department/clinic of cardiology in a hospital as an outpatient program (Figure 1). Because the success of cardiac rehabilitation lies in a comprehensive approach, the very first step is to establish a team of colleagues, faculty members, and referring doctors who are convinced that such a program is needed. To get things started, the first task is to identify a team leader; his person could be a department head or an individual who is interested and ready to take the overall responsibility for the management of the project.

The main goal for establishing a cardiac rehabilitation program is to improve the cardiovascular risk profile of patients in your community. In the early stages, feedback from patients entering into cardiac rehabilitation can help identify potential barriers, and thereby help in developing the strategies to overcome these barriers. Initially, the multidisciplinary team should consist of the following:

- Cardiologist/medical director*
- Physiotherapist/exercise physiologist
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*One person may fill more than one role on the team

Apart from these members, clerical support staff, researchers, and yoga experts can also contribute significantly in a cardiac rehabilitation team.

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Considering the increasing incidence of cardiovascular disease in India, cardiac rehabilitation is a neglected field and there are very few cardiac rehabilitation centers in our country. There is an urgent need to create more such centers to give a comprehensive management to the post intervention patients.

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Figure 1: Plan to start cardiac rehabilitation

Identify needs and problems
Identify existing resources
Develop action plan
Commence pilot program
Analyze and evaluate
Full program implementation

Budget
The budget should be realistic and include both direct costs (such as salary) and indirect costs (such as consumables). While creating a budget, it is important to figure out the answers for questions like:
- How much do you charge from patients to participate in the program?
- How many patients will agree to pay that amount and how to handle situations where patients have difficulty in paying that amount?
- Staff salary
- Cost of exercise equipment such as treadmills, ergometers, ECG machine, defibrillator, etc.
- Office and general supplies like stationary, telephones, and photocopiers
- Data collection and assessment
- Cost of education materials

Program space and equipment essential
Program exercise equipment will include aerobic and resistance equipment appropriate for the number of patients in the program, including bicycle ergometers, treadmills, wall pulleys, and/or free weights. Emergency equipment include a defibrillator, an ECG machine, stethoscopes and sphygmomanometers.

Specific barriers for implementation in India
Despite proven mortality benefit and recommendations for its use by professional guidelines, cardiac rehabilitation remains a vastly underutilized resource.

Although barriers to cardiac rehabilitation have been discussed in Western studies, data in Asian countries are scarce. A study by Chauhan et al. explored the reasons why ethnic minority groups from the Indian sub-continent (i.e., India, Pakistan, and Bangladesh) based in the United Kingdom attended or did not attend cardiac rehabilitation. Most participants had a limited or incorrect understanding of their underlying diagnosis and were more likely to hold cardiac misconceptions. Gender and religious beliefs were also important aspects that had an impact on uptake of services. Reasons for non-attendance were also related to service provision (setting and timing of classes), practical considerations (language barrier and transport problems), and poor understanding of cardiac rehabilitation. Lack of time also emerged as a reason for not attending or completing cardiac rehabilitation.

In a systemic review by Cooper et al., 15 studies were identified and predictor variables were usually categorized as socio-demographic, medical, and psychological. Non-attenders are more likely to be older, have a lower income/greater deprivation, and a tendency to deny the severity of their illness. Despite its proven benefits and need, older patients are significantly less likely to be referred to cardiac rehabilitation. This is despite the fact that older patients adhere well to cardiac rehabilitation once they are enrolled.

Low cardiac rehabilitation referral and participation rates have been persistent problems in the delivery of this potentially life-saving intervention.

How to overcome barriers?
Attendance might be increased by raising patients’ awareness of the benefits of cardiac rehabilitation and addressing misconceptions. Further, gender- and culture-specific barriers to attendance should be considered, and strong physician recommendation may also increase attendance.

Commmencing any type of exercise program may be difficult for patients in full-time employment. Flexible timing of exercise classes outside regular office hours may encourage more patients to attend. Modification of training modules would be an alternative to provide cardiac rehabilitation to patients who are unsuitable for exercise stress test. A home-based exercise program that can be tailored to individual needs may also be appropriate for some patients. Patients should be advised of the dangers of commencing an unsupervised exercise program that has not been determined according to their specific cardiac needs.

Next steps to promote and implement cardiac rehabilitation in India
Physicians’ recommendation and encouragement can motivate patients to participate in cardiac rehabilitation. If physicians acknowledge and explain the importance and benefits of cardiac rehabilitation, more eligible patients may be referred for the program. The highest referral rates are reported in studies that used an automatic referral process for cardiac rehabilitation. In a review by Cortés and Arthur, it is suggested that automatic referral has the potential to reduce bias in the selection of patients for referral to cardiac rehabilitation because of the universality of the referral decision.
Yoga and cardiac rehabilitation

Cardiac rehabilitation has been shown to be beneficial in the recovery process after myocardial infarction. Among its component interventions, evidence suggests that exercise may have a stronger effect on mortality, while psychosocial interventions act more on quality of life measures.

Although exercise-based cardiac rehabilitation has found to be extremely useful, there are limitations for developing countries like India, especially the cost and lack of manpower. Therefore, there is a need for an alternative simple and cost-effective technique. Yoga may be such an alternative technique.

Yoga practice leads to similar outcomes as cardiac rehabilitation (improved physical fitness, stress reduction, and lifestyle change). Yoga has contributed to the general well-being, decreased physiological arousal, better sleep, and appetite. Therefore, yoga could provide a useful framework to develop an economical cardiac rehabilitation program.

Accordingly, a large Indo-UK study has been initiated to study the effectiveness of a yoga-based cardiac rehabilitation program (Yoga-CaRe), compared with the enhanced standard care group, in patients following acute myocardial infarction on cardiac morbidity, mortality and quality of life.

References


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Abstract

Yoga as a lifestyle polypill

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Yoga is a holistic lifestyle and includes healthy diet (sattvic diet), physical exercise, stress management, and tobacco control, and, hence, it could be called as a lifestyle polypill. Yoga is becoming increasingly popular throughout the world because of its health benefit. Even the United Nations has realized its importance and has declared June 21 as the International Day of Yoga. Many studies suggest that the yoga lifestyle may be helpful in controlling risk factors for coronary heart disease life hypertension, type II diabetes mellitus, dyslipidemia, inflammation, oxidative and psychosocial stress, obesity, and smoking. A recent scientific statement of the American Heart Association has concluded that meditation could be considered as an alternative approach to lower blood pressure in all individuals with blood pressure levels more than 120/80 mmHg. Yoga has also been shown to be beneficial in the secondary prevention of coronary heart disease, cardiac rehabilitation, cardiac arrhythmias, and congestive heart failure. Yoga may even regress early and advanced atherosclerosis. However, there are several limitations of the reported studies, and methodologies are generally poor. Large multicenter, well-panellized randomized trials are needed to confirm these findings. However, as yoga is a cost-effective, simple holistic lifestyle without any side effects, it could be recommended for primary and secondary prevention of cardiovasucular disease and it can play a primary and complimentary role in this regard.

Key Words

- Meditation
- Risk factors
- Regression of atherosclerosis
- Cardiac prevention
- Yoga
- Lifestyle

Introduction

The word “Yoga” comes from a Sanskruti word “yoga,” meaning to join together. It connotes going from lower consciousness to the higher. Originating in India 5000 years earlier, today, the practice of yoga is becoming increasingly popular throughout the world. Even the United Nations has recognized its importance and declared June 21 as the “International Day of Yoga.”