

## Cardiovascular diseases and physical activity: Recommendations for Primary Health Care in Cuba

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### ARTICLE INFORMATION

**Key words:** Exercise, Physical training, Ischemic heart disease, Myocardial infarction, Cardiac rehabilitation

**Palabras clave:** Ejercicio, Entrenamiento físico, Cardiopatía isquémica, Infarto de miocardio, Rehabilitación cardíaca

### ABSTRACT

Heart diseases, particularly ischemic heart disease and myocardial infarction, are the leading cause of death in Cuba. The benefits of physical exercise have been demonstrated in the primary and secondary prevention of ischemic heart disease and its favorable effects on the quality of life, morbidity, and mortality of patients with coronary artery disease and other cardiovascular diseases. In order to design an exercise regime, the "fundamental principles of physical training" must be taken into account: type of exercises, intensity, duration and frequency. The aim of this type of program is to increase the quality and quantity of life of the patient with heart disease, and for checking its effectiveness, periodic evaluations can be carried out at any level of care. One of the main expected benefits is that most patients will be able to rejoin their work or social activities earlier and in better conditions; in addition, they improve their functional capacity, they alleviate their symptoms, decrease the consumption of medications, and the anxiety and depression usually observed, as well as the important preservation of the patient's role in her/his family and

social life, all of which will result in significant socio-economic benefits.

### **Enfermedades cardiovasculares y actividad física: Recomendaciones para la Atención Primaria de Salud en Cuba**

### RESUMEN

*Las enfermedades del corazón, en particular la cardiopatía isquémica y el infarto miocárdico, constituyen la primera causa de muerte en Cuba. Los beneficios del ejercicio físico se han puesto de manifiesto en la prevención primaria y secundaria de la cardiopatía isquémica, y se conocen sus efectos favorables en la calidad de vida, la morbilidad y la mortalidad de pacientes con enfermedad de las arterias coronarias y otras afecciones cardiovasculares. Para diseñar un régimen de ejercicios hay que tener en cuenta los «principios fundamentales del entrenamiento físico»: tipo de ejercicios, intensidad, duración y frecuencia. El principal objetivo de un programa de este tipo es aumentar la calidad y cantidad de vida del paciente con cardiopatía, y para comprobar su efectividad se pueden realizar evaluaciones periódicas a cualquier nivel de atención. Uno de los principales beneficios esperados consiste en que la mayoría de los pacientes podrán reincorporarse más temprano y en mejores condiciones a sus actividades laborales o sociales; además, mejoran su capacidad funcional, alivian sus síntomas, disminuyen el*

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*consumo de medicamentos, y la ansiedad y depresión usualmente observados, así como la importante preservación de la función del paciente en su vida familiar y social, todo lo cual redundará en significativos beneficios socio-económicos.*

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## **INTRODUCTION**

Cardiovascular diseases, including heart and cerebrovascular diseases, have remained as the leading cause of death in Cuba for more than 50 years, with a mortality rate of 300.9 per 100,000 inhabitants in 2015 (218.3 and 82.6 per 100,000 for heart diseases and cerebrovascular, respectively)<sup>1</sup>. Ischemic heart disease and acute myocardial infarction have a primary role in this mortality, and they also show a high prevalence and incidence, respectively. This fact is more alarming when taking into consideration that the heart attack appears increasingly at earlier ages of life, precisely at a time when the individual is more useful to society<sup>2</sup>.

Several publications have demonstrated the marked benefits of physical exercise in primary and secondary prevention of ischemic heart disease<sup>3-6</sup>. The effects of physical training benefits have been noted as part of a rehabilitation program for patients with ischemic heart disease and other cardiovascular diseases<sup>5-9</sup>. The prescription of physical exercises has been defined as “the recommendation of a regime of systematic and individualized physical activity to achieve the optimal physiological patient benefits of physical training”<sup>10</sup>. This is intended to increase the individual's physical ability, to improve her/his health and to reduce the risk of occurrence or recurrence of the disease, and to ensure her/his safety during participation in the exercises.

The specific objectives for participating in a physical training program vary according to the particular interests of the individual, her/his needs, health or underlying disease, aspects that influence prescribing the exercises. Their indications are related below<sup>10-14</sup>:

- Recent or old myocardial infarction
- Chronic stable angina
- Coronary artery bypass grafting
- Coronary artery disease without surgical treatment indication
- Other surgical heart diseases (congenital or acquired)
- Coronary angioplasty

- Compensated heart failure
- Cardiomyopathies
- Arterial hypertension
- Heart and cardiopulmonary transplants
- Implantable pacemakers and automatic defibrillators
- Nonlethal heart arrhythmias
- Peripheral vascular disease
- Primary or secondary prevention of ischemic heart disease
- Long periods of physical inactivity

To achieve the beneficial effects of physical exercise as a primary and secondary prevention in ischemic heart disease, it is necessary that the “fundamental principles of physical training” are met; therefore, for indicating or designing an exercise regime of physical exercises, the following aspects should be taken into account: type and way of performing them, intensity, duration and frequency. “Individualization” and their “way of progression” must be taken into consideration<sup>14</sup>.

This program must be also adequate to the type of patient and time in which she/he is after an acute coronary event, cardiac surgery or therapeutic procedure, either interventionist or medication. In general, it is desirable to adapt the phase of rehabilitation in which the patient is: hospital, convalescence or maintenance.

## **OBJETIVES**

The main objective of a physical exercise program consists in increasing and prolonging the quality and quantity of life of patients with heart disease, thus, to enable her/him to perform at the highest possible level of work and make her/him able, by her/his own efforts, to return to the life in the community as normally as possible, with an active and productive life.

## **JUSTIFICATION**

With this background as a premise and in order to fulfill the above objectives, in Cuba, for more than 20 years, a cardiac rehabilitation program has been developed, applied directly in the community, sponsored by the Ministry of Public Health and coordinated by the National Group of Cardiology, which takes effect today in all provinces<sup>15,16</sup>. For

carrying it out, the human and material resources available in each zone or region of the country are taken into account, as well as the socio-economic conditions of each place.

## POPULATION

All those patients suffering from any medical or surgical heart disease, congenital or acquired, with particular emphasis on cases with myocardial infarction, or with other form of ischemic heart disease<sup>17</sup>, are included in the program.

## ACTIVITIES

The program comprises three phases:

- Phase I (Hospital). It takes place in all hospitals in the country, where they admit patients with the diseases mentioned before; in this phase, professionals involved in the comprehensive care will participate. During the exercise sessions, which will be started with active and passive physiotherapy, a conditioning pulse that exceeds 20 beats/minutes will be reached at a basal state.

The discharge will be sent to the family doctor or the corresponding polyclinic in a document stating the definitive diagnosis, complications and treatment, where prescribing the physical activity is in-

cluded.

- Phase II (Convalescence): It takes place in the departments or rehabilitation centers of Health centers and Polyclinics, Therapeutic Areas and other selected community places, where specialists, family doctors, bachelors and experts, will participate and develop the rehabilitation program. It will last approximately 8 weeks.

Supervised exercise sessions will be held 3 to 5 times per week, or daily or on alternate days, according to the possibilities of each place and each patient, and they will last for 30 to 45 minutes. Training sessions will include dynamic, rhythmic, repetitive physical exercises, with a necessary intensity for reaching the predetermined training pulse. Calisthenics, walking, jogging, static cycling bike, treadmill, paddles and other aerobic exercises could be employed (**Figures 1 y 2**).

- Phase III (Maintenance): It starts with work or social reintegration of the patient and it will last indefinitely. It will be held at the same places of Phase II but mainly in sports fields, gyms, parks and other places in the community with the minimum conditions required for the completion of the exercise program, for which it is not necessary the use of sophisticated equipment or other material resources. Family doctors, physiatrists, physiotherapists, teachers and bachelors in



**Figure 1.** Patients with several cardiovascular diseases, mainly with different forms of ischemic heart disease, while conducting a session of supervised physical exercises in a gym at the Rehabilitation Center of a hospital in the capital. The patients were previously evaluated from the clinical point of view by a cardiologist, and they were determined an individual training pulse (Photo by the author).



**Figure 2.** After the callisthenic exercises, made by way of “warming”, patients perform a dynamic higher intensity exercise, in this case in a training static upright bicycle ergometer; they can also practice them in a treadmill. In all the sessions of exercises, the fundamental principles of physical training in cardiac patients are fulfilled (Photo by the author).

Physical Culture will participate in supervising the exercising sessions; and other specialists in the instruction and evaluation of the program.

The physical training program should follow the principles of the previous phase. The higher intensity exercise should be carried out continuously during a range of 15 to 30 minutes; and it must be made with no less frequency of 3 times per week. This phase may be complemented by the realization of collective sports' games to achieve the comradeship among patients and greater adherence to the program<sup>18</sup>.

The maintenance phase is indefinite, but more emphasis should be made in the first year after an acute episode, coronary angioplasty or surgery.

## CONCLUSIONS

One of the main benefits expected with the implementation of this program is that a large majority of cardiac patients will be able to rejoin earlier, and in better conditions, to their work or social activities. It is also expected an improvement in their functional capacity, symptoms' relief, reducing the consumption of drugs, and anxiety and depression usually observed; and the important role of preserving the patient in their family and social life, all of which results in significant socio-economic benefits for our country<sup>16,17</sup>.

## CONFLICTS OF INTEREST

None

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