



## COMMENTARY

# Development of a Cardiovascular Rehabilitation Program: Focus on Exercise

C. Richard Conti MD<sup>1</sup>, Jamie B. Conti MD<sup>1</sup>, and Jeff Plasschaert MS, CSCS, CSPS<sup>1</sup>

<sup>1</sup>Department of Medicine, University of Florida, Gainesville, FL 32610, USA

## Introduction

The members of the Cardiovascular Division at the University of Florida, Department of Medicine have long recognized the need for cardiac rehabilitation of our patients. Prior to July 2016, a rehabilitation program for cardiovascular patients at the University of Florida did not exist. In July 2016 we initiated a total patient rehabilitation program for all cardiac patients, whether their disease was related to myocardial ischemia, myocardial infarction, arrhythmia, or heart failure. When beginning such a program there are several topics that must be considered. These include space for patients and equipment, as well as personnel to staff the program. Initially, personnel should include a physiologist, a nurse and a physician.

## What Makes up Cardiac Rehabilitation

Rehabilitation is a multi-pronged attack on cardiac and vascular disease. The purpose of cardiac rehabilitation is to improve patient outcome by regular rehab sessions over an extended period of time. By improved outcome we mean that the patient has a better quality of life, e.g. an increase in their ability to participate in activities of daily living, and possibly prevent or at least delay future cardiac events.

This approach is related principally to exercise, but risk factor modification and counseling of the

patient about diet and smoking cessation is equally important.

Obviously, when exercising a cardiac patient, one starts slowly and increases the intensity of exercise as time goes on and the patient tolerates the increase. The program should also inspire confidence and optimism about prognosis of the patient relating to their cardiovascular condition.

Overall one has to consider that rehabilitation is not just exercise, but exercise does play a major role in the rehabilitation of cardiac patients.

Many other aspects of rehabilitation need to be considered in the cardiac patient including weight reduction, smoking cessation, nutrition, diabetes control, lipid management, blood pressure control and any other risk factors, i.e. need for revascularization, that need to be addressed.

In the future, patients with peripheral arterial disease should also be included in the rehab process since exercise is known to decrease limb ischemia (i.e. reducing intermittent claudication) and preventing limb loss.

## Managing the Patient Clinically

It is important to point out to the patient that the rehab process is part of the long term care of the patient, but not acute care. Any pertinent clinical issues should be taken care of mainly by the patient's physician or, if an acute situation arises during rehab sessions, e.g. ventricular tachycardia, severe chest discomfort, hypotension etc. the patient should be referred to the emergency department for possible admission.

Patients need to partner with their personal doctor regarding long range risk factor modification,

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**Correspondence:** C. Richard Conti, MD, MACC,  
Department of Medicine, University of Florida, Gainesville,  
FL 32610, USA, E-mail: [conticr@medicine.ufl.edu](mailto:conticr@medicine.ufl.edu)

such as smoking cessation, weight reduction, blood pressure control, diabetes management and medications. Patients who cannot or will not cooperate with their physician will most likely not benefit from cardiovascular rehabilitation.

## Space Requirements

Since we share space with lung transplant patients, one needs to be creative when scheduling patients for rehab. Generally, we need means enough space to house 10 to 12 patients at a session. This also means that that space is needed to house equipment such as treadmill exercise testing and upper body conditioning devices. Also there must be space to provide adequate facilities to examine the patient for vital signs e.g. blood pressure, heart rate and rhythm and things of that sort. The cost of the space and exercise equipment, must be shouldered by the hospital which houses the space and equipment.

## Personnel Requirements

At least three persons should make up the rehab staff initially. A physiologist, an RN and a physician is preferred. The physiologist must have an interest in rehabilitation of cardiac patients and have some understanding and knowledge about other needs at the patient has such as nutritional needs, smoking cessation, weight reduction etc.

A registered nurse assigned to rehabilitation must have an interest in the subject and be familiar with cardiac patients and their problems i.e. medication adherence.

A physician needs to provide oversight of the program and needs to be in the environment, not necessarily in the rehabilitation area, but within the hospital confines so that they can be called if an emergency arises. The physician must appear in the cardiac rehab facility periodically and sign in to indicate their presence.

Ideally, the physician should provide leadership for the development of medical and scientific questions that should be addressed periodically based on information obtained from the patient i.e. did the patient feel better and did they improve function after sessions in the cardiac rehab unit?

## Preliminary Results

From July 2016 through March 31, 2017 there has been a total of 150 patient referrals of which 106 were male, 44 were female. Not all these referrals began the program. Many lived too far away to return to the program three times per week.

Our patients were ages 19–94 with average age of 61.82 years. A total of 71 patients had a full rehab evaluation and so far, 17 patients have finished the 12 week program. Thirty seven patients have not completed the rehab program but remain compliant with and still participate in the program. Several patients opted for a home program or participated in supervised exercise at a gym close to their home. Some patients opted out of the program for financial reasons, prolonged travel distances to our rehab program or non compliance e.g. smoking cessation.

Referrals were from approximately 60 different ZIP Code areas around the University of Florida. Most referrals come from the cardiovascular clinic, some from the inpatient service and a few from physicians outside the University of Florida. These patients had a variety of cardiovascular problems, including those with chronic systolic heart failure, Myocardial ischemia, recent myocardial infarction, post coronary bypass graft surgery and recent aortic valve replacement, (TAVR). Other conditions include patients with chronic ischemic heart disease ischemic, cardiomyopathy, diastolic heart failure, atrial fibrillation, hypertension, PVC's and chronic lung problems.

Most of these referrals were from cardiologists of our own division of cardiovascular medicine and most were clinic patients. Many of these clinic patients were sent to clinic after a hospital admission, to be considered for cardiac rehab.

When patients were questioned about whether they improved after several cardiac rehab sessions, their uniform response was that they increased their activities of daily living.

### Some Unique challenges

**Parking** is always a problem in a medical school environment; to solve this issue we offer free parking (self or valet) as well as patient transportation from vehicle to rehab site.

**Education**; at the present time only general education is offered, since we do not have enough patients

to group them into areas for specific indications based on the patient's disease.

## Conclusion

Our cardiovascular rehabilitation program began as a pilot project in order to understand the number of staff required to initiate the program and what the space requirements would be. It is not easy beginning a cardiac rehab program. However, physicians truly appreciate the opportunity for their patients to participate in the program. I suspect our program will be growing incrementally over the next year or so because patients who can participate, appreciate and enjoy the program and sense that it is a necessary part of their long term recovery. Our small program has grown considerably over the past 8 months. We predict that it will continue to grow in order to satisfy the increasing referral requests by patient's physicians and by patients themselves.

## What is Needed for the Future?

The program has benefitted greatly from the financial support of the hospital and Department of Medicine.

The number of personnel will increase as the program grows and perhaps become self-supporting.

Ideally, the program should have a physician with expertise in comprehensive cardiac rehabilitation, risk factor modification and nutrition, who is also interested in long term maintenance of rehab, in order to maintain healthy life style changes.

In addition to the above, the patient should continue with an exercise program in order to retain physical fitness after cardiac rehab has been completed. Generally we can send the patient to supervised or unsupervised activity, tailored to the patient's needs and condition.

The patients should have regular contact with rehab staff and their physician, to insure the progress of the patient, as well as providing emotional support to continue the rehab process and recovery. All agree that incorporating exercise into one's lifestyle should be forever as should, smoking cessation, weight reduction, nutrition and continued medical therapy.

A recently published article relating to physical rehab of 27 randomized patients, supported the feasibility and safety of rehab in the older, frail patients (ages 60 to 98-average age around 72 at baseline.) with multiple and wide spread physical impairments [1]. The investigators suggest that further study is needed to determine whether sustained physical rehab will help with many other manifestations of old age, e.g. balance, mobility, strength etc., and improve clinical outcomes in these patients.

## REFERENCE

1. Reeves GR, Whellan DJ, O'Connor CM, Duncan P, Eggebeen JD, Morgan TM, et al. A novel rehabilitation intervention for older patients with acute decompensated heart failure; the Rehab-HF Pilot study. *JACC Heart Fail* 2017;5(5):359–66.