

Guidelines Gap: Physical Activity

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Aerobic exercise has been the cornerstone of cardiac rehabilitation since its inception in the 1950s. Subsequently, national and international public health authorities have identified physical inactivity as one of the major risk factors for coronary heart disease, and recent guidelines on the topic have recommended that physicians advise their patients on the need for regular exercise, together with a prudent low fat diet, weight control, and smoking cessation. Despite this, there is considerable evidence that only a minority of physicians refer patients for cardiac rehabilitation, prescribe exercise, or effectively pursue other forms of health promotion. This is further exemplified by a study recently carried out at the Toronto Rehabilitation Centre, in which the sons of patients who had sustained a premature coronary event were found to have a substantial prevalence of coronary risk factors; and although almost all had a family physician whom they had seen an average of 4.7 times over the previous 3 years, only a minority had received comprehensive risk profile measurement or appropriate lifestyle counseling. Studies such as this serve to underline the continuing need to educate health care providers on the importance of regular physical activity as part of a healthy lifestyle. Physicians, in turn, should seek the support of appropriate government departments, community agencies, schools, and commercial bodies to get the message out to the public at large. It could be our best contribution to the health of Canadians in the third millennium. (*CVD Prevention 1999; 2:23-26*)

Key Words • cardiac rehabilitation • secondary prevention • physical activity

Secondary prevention is the use of appropriate countermeasures to exert a favorable influence after the onset of disease. By definition, it does not include programs to prevent the development of disease in a healthy population (primary prevention), nor, strictly speaking, programs that address the multifaceted problems facing individuals who have already suffered demonstrable consequences of disease in the form of an event (tertiary prevention). In the context of coronary heart disease, however, the distinction between secondary and tertiary prevention has become increasingly blurred. Cardiac rehabilitation programs have traditionally dealt with the postmyocardial infarction and coronary artery bypass graft patient. However, recent evidence has determined that the same lifestyle and risk factor modification approaches used in these programs can also be applied to ward off

future coronary events in those individuals with proven ischemic heart disease. Cost analyses have demonstrated that classical cardiac rehabilitation programs result in a saving in overall health care costs, by accelerating return to work, reducing re-hospitalization rates, and averting the need for costly interventions such as coronary artery bypass surgery and angioplasty.¹⁻³ Extending these benefits to the high risk patient should result in even greater potential savings.

Unfortunately, despite these benefits, cardiac rehabilitation is grossly underutilized and undervalued. It has been estimated that only about 20% of potential candidates receive the service.^{4,5} Inevitably, the gap will become even greater as we widen the referral net to include subjects who are at an earlier stage of the disease. To some extent, this is hardly surprising. After all, general rehabilitation is neither high tech nor high profile. Linking it to cardiology has not made it so, and to date, it has not attracted many cardiologists or psychiatrists to its ranks. This may be about to change, but in the meantime, cardiac rehabilitation suffers from inadequate funding, lack of consensus on program content and duration, poor regional distribution of ser-

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vices and therefore limited patient accessibility, and a low referral rate from physicians in general.

Program Content

Secondary prevention programs address the multifactorial aspects of coronary disease, offering a wide range of services that are tailored to the patient's individual needs. Nevertheless, the major components remain lipid management, smoking cessation, blood pressure control, and exercise training. The last provided the impetus for cardiac rehabilitation as we know it today when it was introduced in the early 1960s to counter the ill effects of the then routine prescription of prolonged hospitalization and bed rest for the patient recovering from myocardial infarction. Today, exercise training remains a major cornerstone in secondary and tertiary prevention. Alone, or in combination with other strategies, it has been shown to reduce symptoms, increase cardiopulmonary fitness, improve lipid profile, ameliorate hypertension, counter obesity and adult onset diabetes, enhance fibrinolysis, improve endothelial function, alleviate depression, improve quality-of-life, and reduce the incidence of sudden death and fatal myocardial infarction.⁶ Certainly, a formidable list! More recently, exercise training has emerged as having a role to play in strategies to stabilize or reverse the atherosclerotic process. The Ornish Lifestyle Program combined regular daily exercise with a low fat diet and stress reduction techniques to obtain plaque reversal in a small group of coronary patients.⁷ No attempt was made to determine the impact of the various interventions, although one would suspect that the almost draconian low fat diet would emerge as the prime candidate. By contrast, the Heidelberg trial, which also obtained stabilization and reversal in a significant number of treated patients, compared the effectiveness of its American Heart Association Step II Low-Fat Diet with its vigorous exercise training protocol.^{8,9} Of the two interventions, the exercise training regimen was found to be more closely associated with plaque reversal.

In the face of the accumulated evidence regarding the benefits of regular exercise, in 1992, the American Heart Association's Committee on Exercise and Cardiac Rehabilitation of the Council on Clinical Cardiology not only added physical inactivity to cigarette smoking, hypercholesterolemia, and hypertension as a major primary risk factor for coronary heart disease, but also went on to state that "Physicians have the opportunity and respon-

sibility to promote regular exercise, as well as the reduction of high blood pressure, management of abnormal blood lipids, and prevention and cessation of smoking."¹⁰ In 1995, a joint statement by the Centers for Disease Control and the American College of Sports Medicine advocated that "every US adult should accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week."¹¹ In 1995, the Canadian Cardiovascular Society Consensus update on the report of the management of postmyocardial infarction patients makes the following statement, "Based on the documented benefits and risks of regular exercise for post-MI patients, it is recommended that most patients engage in individually designed exercise programs to achieve optimum physical and emotional health." This is followed by specific exercise guidelines for patients in Phase I, II, and III rehab programs.¹²

Unfortunately, the beneficial effects of exercise have yet to be appreciated by most physicians. Recently, the Toronto Rehabilitation Centre (TRC) investigated the extent to which family physicians challenged a high risk population to adopt a healthful lifestyle. The sons ($n = 571$, average age 32 years) of parents who had suffered a premature coronary event attended the center for a risk factor evaluation, which included interview with questionnaire, as well as measurement of body dimensions and blood lipids. Despite concern over their family history, 75% of the subjects were inactive, 34% were obese, 23% were smokers, and 47% were hypercholesterolemic as defined by the National Cholesterol Education Program Guidelines (≥ 5 mmol/L in an individual with two or more risk factors). Although 91% had seen their regular family physician, an average of 1.8 times in the previous year and 4.7 times over the previous 3 years, only a minority had received comprehensive risk factor screening or given appropriate lifestyle advice. This echoes earlier comments on the rarity of physician involvement in exercise prescription or other forms of health promotion.¹³⁻¹⁶ One survey found that only one patient in ten received health education from the family physician,¹⁷ and others noted that less than half of the smokers were advised to stop smoking.^{18,19}

Paradoxically, the much vaunted success in the 1960s of exercise rehabilitation in reversing the ill effects of prolonged bed rest may be a contributor to the current poor referral rate. Prolonged hospital stays are a thing of the past; patients recovering from myocardial infarction, coronary bypass surgery, and coronary angioplasty are rarely decondi-

TABLE 1. The Advantages and Disadvantages of Home Versus Formal Exercise Programs

Formal Supervised Exercise	Home Exercise
<ul style="list-style-type: none"> ● Can accommodate complex, high-risk patient ● Safety, efficacy established ● Facilitates education, lifestyle changes ● Permits group interaction ● Offers staff support, surveillance ● Support for socially-isolated 	<ul style="list-style-type: none"> ● Suitable for low-risk patient ● Safe and effective ● Lesser cost, convenient ● Promotes self-reliance ● Communication with case manager by telephone, fax, internet, transtelephonic ECG

tioned and therefore many physicians do not perceive them as being in need of exercise training. Furthermore, physicians are often unaware of the wider-ranging physiological and psychological benefits of exercise.

We also need to correct the misconception that women and the elderly comply poorly to an exercise regimen, or fail to achieve a satisfactory training effect. In fact, a recent study completed at the TRC involving 545 men and 546 women, aged 40–79 years, showed that this was not so, with women of all ages as well as elderly men complying and responding very well to a 12-month progressive walking program.²⁰

If we are to close the gap between guidelines and implementation, then we need to improve the physician's appreciation of regular exercise as an important therapeutic tool. Other measures include the greater use of health care professionals, such as nurses, exercise physiologists, as well as physical and occupational therapists. Haskell et al.³ showed that structured home exercise programs, supervised by nurse case managers, can be both safe and efficacious in appropriate cases. DeBusk et al.²¹ have used a similar approach to reduce coronary risk factors and with equal success. It should be noted that the latter program involved an average of only 9 hours of the nurse case manager's time/patient year, with an annual/patient cost of approximately \$500. However, formal on-site programs are preferable in certain cases, and the pros and cons of both approaches are outlined in Table 1.

Support of the referring physician is essential for the success of any rehabilitation/secondary prevention strategy. Rehabilitationists should consider themselves as complementing and supplementing the efforts of the family physician and the cardiologist. Ades et al.²² have shown that the most significant predictor of compliance to a rehabilitation program is the fact that the patient's physician spoke in its favor. It is essential to keep the referring physicians regularly informed of the patient's progress, or lack of it, and to request permission

before carrying out any additional ancillary investigations, such as exercise, testing ambulatory ECG, or blood pressure monitoring. Failure to do so is an infringement on the patient/physician relationship, assumes the right to carry out a private practice procedure, and could well jeopardize future referrals from the same source.

Attention should be paid to program duration. Secondary prevention strategies, whether they involve instilling good exercise habits, changing one's diet, or attempting smoking cessation all require time. The most successful programs are closer in duration to the European model than to the North American (i.e., 6–12 months rather than 12–16 weeks). This can be accomplished, as previously mentioned, by the judicious use of structured home programs, or the TRC approach by which the patient attends for a formal supervised exercise/education session once weekly, and then works out four times weekly away from the center.²³

For too long, government and medicine alike have paid lip service to rehabilitation and secondary prevention. When we consider the escalating costs of health care in Canada, we must surely ask ourselves if we are paying the price for that neglect. While Canadians continue to debate the future of health care and to worry about the introduction of a two-tier system, they get fatter, exercise less, and continue to smoke. The costs of the consequences will gravely affect the future of our much valued health service, and we have the evidence to prove it. Hopefully, as we enter the third millennium, we can get the message across to governments and the community.

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