

Promotion of Physical Activity and Cardiac Rehabilitation for the Management of Cardiovascular Disease

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ABSTRACT

National rates of cardiovascular disease continue to increase, whereas levels of physical activity (PA) remain discouragingly low, representing lost opportunity for effective lifestyle management. When equipped with knowledge of recent guidelines and cardiac rehabilitation (CR) options, nurse practitioners will be poised to most effectively manage patients with cardiovascular disease through PA measures. Towards this end, this article will overview the 1) benefits of PA; 2) advantages, safety, structure, and qualifying diagnoses for CR; 3) efforts to increase CR referral and participation; 4) alternatives and supplements to traditional CR programs; and 5) principles and guidance for prescribing PA outside of the CR setting.

Keywords: cardiac rehabilitation, cardiovascular disease, exercise, mHealth, physical activity

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The benefits of regular exercise/physical activity (PA) to improve cardiovascular health are evident for both healthy individuals and those with diagnosed cardiovascular disease (CVD).^{1,2} Less well explored is the role of the nurse practitioner (NP) in guiding PA recommendations for patients with CVD and prescribing cardiac rehabilitation (CR) for patients with qualifying diagnoses. The purpose of this article is to raise knowledge among NPs regarding PA guidelines and CR options for the effective management of patients with CVD.

BENEFITS OF PHYSICAL ACTIVITY

Regularly engaging in PA and improving physical fitness are clearly associated with a decreased risk for CVD, stroke, and related mortality²⁻⁴ and are associated with positive health markers, specifically, ideal body mass index, cholesterol, blood pressure (BP), and blood glucose levels.⁵ Updated recommendations state that all individuals should be as physically active as abilities and conditions permit;¹ however, according to recent statistics from the Centers for Disease Control and Prevention, only 20.2% of American adults achieve the recommended

150 minutes per week of moderate-intensity aerobic physical activity or 75 minutes per week of vigorous-intensity aerobic physical activity and engage in muscle-strengthening activities on 2 or more days a week.⁶ Although Americans do not obtain the recommended daily level for PA, data indicate an increase in the prevalence of CVD; 27.6 million Americans are diagnosed with CVD, comprising 11.5% of the adult population.^{1,7,8}

PA can prevent deleterious cardiovascular outcomes by improving heart function, reducing CVD risk factors, and preventing atherosclerosis.⁴ PA/exercise reduces myocardial demand through improved systolic/diastolic BP control and a lower resting and exercise heart rate, increases oxygen uptake, improves endothelium-related coronary vasodilation, increases heart rate variability and autonomic tone, increases fibrinolysis, and reduces platelet adhesiveness and aggregation. It improves the lipid profile and glycemic control, reduces insulin requirements, helps with weight management/loss of intra-abdominal fat, and improves cardiorespiratory fitness and psychological well-being.⁹⁻¹¹ Among those with diagnosed coronary heart disease, PA

reduces the risk for a myocardial infarction (MI). Knowledge of the physiology of exercise/PA as well as the specific positive benefits can guide NPs in safely tailoring PA plans for patients with CVD. For patients with a recent CVD event, procedure, or surgery, CR is a structured program through which patients can learn to incorporate exercise/PA into their daily lives as well as reduce their overall cardiovascular risk.

CR

Benefits

Meta-analyses show the benefits of CR. In a 2016 Cochrane Review of 63 randomized controlled trials including 14,486 patients after MI, revascularization, or with known coronary heart disease assigned to either exercise-based CR or no-exercise usual care, CR led to a 26% lower relative risk of cardiovascular mortality and an 18% lower risk of hospital admissions. Although no effect was observed on the total mortality, MI, or revascularization, 14 of 20 studies showed improved health-related quality of life after CR compared with usual care.¹² Therefore, referral to CR is an essential component of secondary prevention guidelines for patients who have a qualifying CVD diagnosis.¹³ Qualifying diagnoses for CR include coronary artery bypass surgery, percutaneous intervention, stable angina pectoris, heart or heart-lung transplant, heart valve repair or replacement, heart attack (MI) in the last 12 months, recent cerebrovascular accident (women only), and stable chronic heart failure with reduced left ventricular ejection fraction.¹⁴⁻¹⁶

Safety. According to the National Heart, Lung, and Blood Institute, PA is safer for patients with a recent CVD event within the rehabilitation setting than at home because patients are monitored by trained team members.¹⁷ In a French study involving over 25,000 patients undergoing exercise stress tests and training during CR, the cardiac event rate was exceedingly low (ie, 1 per 8,484 exercise stress tests and 1 per 49,565 patient-hours of exercise training). Furthermore, the cardiac arrest rate was 1.3 per million patient-hours of exercise.¹⁸ No difference has been found in major event rates between early enrollees (less than 2 weeks after hospital discharge) versus late enrollees (greater than 2 weeks after

hospital discharge) in CR or by diagnosis, suggesting that early enrollment into CR is unlikely to harm patients if individualized assessment and exercise prescription occur within an established CR program.¹⁹

Outpatient CR. CR programs have evolved into a multidisciplinary focus on patient education, individually tailored exercise training, and modification of risk factors.²⁰ Exercise regimens often follow the “FITT-VP” principle (ie, frequency [how often], intensity [how hard], time [duration], type [mode, eg, aerobic or resistance], volume [amount], pattern and progression [advancement]).¹⁰ Before beginning exercise, comprehensive patient assessment occurs followed by planning of interventions and expected outcomes. Nutrition counseling; weight management; BP, lipid, and diabetes management; tobacco cessation; psychosocial interventions; and home PA counseling are incorporated.²¹

Referrals to CR may be initiated by various provider types across specialties, such as internal/family medicine, cardiology, or cardiovascular surgery. Currently, some, although not all, CR programs accept referrals from NPs. Communication regarding patient progress and potential setbacks is maintained between CR staff and the referring provider.

Phases. The phases of CR extend from the time of cardiac event to the point of optimal cardiovascular health.²² Phase 1 begins while the patient is hospitalized once an acute cardiovascular condition is stabilized or controlled.^{23,24} Phase 1 involves support, education for the patient and family, self-care, and structured walking.²² Phase 2 commences immediately in the outpatient setting, lasting approximately 10 to 12 weeks. The patient undergoes a supervised exercise program (3 times weekly), and adjustments are made to the regimen as heart and lung function improve. Along with an exercise program, the patient receives comprehensive secondary prevention, such as nutrition counseling and smoking cessation, and receives recommendations for at-home exercises.^{22,23} Phase 3 is considered a long-term maintenance period for cardiac fitness, continuing to focus on outpatient exercise and education. The patient is expected to assume greater responsibility for self-monitoring, and

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