

Exercise Therapy Benefits for Heart Failure

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ABSTRACT

Heart failure (HF) places significant burdens on patients, families, and health care systems. The complex pharmacologic regimens that form the basis of HF management alone are not sufficient to effectively manage the disease. Exercise therapy is positively associated with lower mortality and higher survival rates, along with a significant reduction in cardiac events and hospitalizations. Exercise therapy benefits patients with HF without increasing treatment costs. Nurse practitioners are well suited to assist their patients in successfully and safely incorporating exercise into their daily lives.

Keywords: aerobic exercise, exercise therapy, heart failure, strength training

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EXERCISE THERAPY BENEFITS FOR HEART FAILURE

Heart failure (HF) is a chronic and complex clinical condition that is a well-known end point of many cardiovascular disorders. Despite enhanced treatment for and prevention of cardiovascular disease in the 21st century, HF prevalence is expected to increase by 46% by 2030.^{1,2} The increasing incidence and prevalence rates of HF make it a global health problem. HF is directly associated with significant morbidity and mortality, depression, decreased quality of life, increased physical dependency on others, and frequent and prolonged hospital admissions, with an overall poor health prognosis.^{1,3}

Nonpharmacologic therapy for HF management includes lifestyle changes of maintaining ideal body weight, smoking cessation, limited use of alcohol and caffeine, and participating in a regular exercise program.⁴ Although multiple studies have shown that exercise training can benefit individuals with HF and that exercise is a safe and effective therapy to improve peak oxygen uptake (VO_2), muscle strength, and quality of life, just one-tenth of patients with HF are referred for exercise therapy after hospital discharge.^{2,3} The focus of this article is to explore the role of exercise therapy and its benefits for patients with HF.

BACKGROUND

Worldwide, 23 million people have HF, and 5.7 million live in the United States.^{5,6} More than 600,000 new cases are reported in the US each year. HF costs are at an all-time high in the US, exceeding \$30.7 billion annually—2% of total health care expenses—and are projected to rise to \$69.7 billion by 2030.^{6,7} HF surpasses pneumonia, cancer, and stroke as the most common reason for hospital admission in people older than 65 years.⁵ Of patients with HF, 78% have at least 2 hospital admissions each year.² These high hospital admission rates, which have been increasing in recent years, are direct results of economic incentives to keep hospital stays shorter.

Hospital stays for patients diagnosed with HF average less than 5 days, which is seldom sufficient time to manage the disease effectively enough for patients to be discharged home. Yet, reimbursement policies and cost-effectiveness are driving hospitals to discharge patients sooner, often resulting in substandard inpatient management, increased rates of transfer to short-term and long-term facilities, and increased readmission rates.⁵ HF is the most common cause of readmissions: 27% of patients are readmitted within 30 days of discharge, and 50% are readmitted within 6 months.^{5,8} These numbers are significant because there is a well-established link between

increased frequency of hospitalizations and increased mortality, with the greatest risk of death being immediately after discharge.⁷

Poor adherence to treatment plans is the most common reason for readmissions, indicating that most readmissions are preventable.⁸ The repercussions of suboptimal HF management, coupled with increasing hospitalizations, not only contribute to poor prognosis but also drive up the costs associated with HF.

RISK FACTORS

One risk factor for HF is age > 65; in fact, by age 75, HF is diagnosed in 10% of the population.⁹ Male sex and African American race are also associated with increased susceptibility to HF.⁹ Chronic health problems that increase the risk of developing HF include hypertension, diabetes, obesity, left ventricle hypertrophy, ischemic heart disease, valvular heart disease, chronic renal insufficiency, sleep apnea, alcohol abuse, substance use, and chemotherapy.

HF risk is increased in individuals with poorly controlled chronic health problems. Uncontrolled hypertension, with blood pressure > 160/90 mm Hg, doubles the estimated lifetime risk of HF, and diabetes increases the risk 2-fold in men and 5-fold in women.⁵ Having a body mass index > 30 kg/m² doubles the risk.⁵ The availability of newer medications and technologies has increased longevity for people living with hypertension, diabetes, and obesity; thus, the incidence and prevalence of HF is expected to continue rising.

CLINICAL MANIFESTATIONS

There may be few nonspecific symptoms during the initial phases of HF, which presents a challenge for early diagnosis.⁵ The clinical symptoms that are present are the direct result of inadequate cardiac output and venous return. As the left ventricle attempts to maintain forward flow, increased end-systolic volumes lead to an increase in left ventricular end-diastolic pressure. This causes increased left atrial pressures, resulting in a backup of blood and increased pressure in lung capillaries,² and leading to pulmonary congestion, cough, and dyspnea. These symptoms, along with fatigue and exercise intolerance, are characteristic of HF.⁹

HF is a progressive disease with severe symptoms that worsen over time. Its cardinal symptom is exercise intolerance, manifested as premature fatigue and dyspnea during physical exertion. Decreased exercise tolerance, which is often the first symptom and the primary reason for seeking medical care,¹⁰ is highly associated with progressive functional deterioration.¹⁰

Fatigue is common and is marked by impaired functioning and reduced motivation. Fatigue negatively affects the ability to perform everyday activities, reduces exercise capacity, and traps patients in a cycle of inactivity and further functional deterioration.^{2,5} Even with advanced pharmacologic therapies, many patients still experience dyspnea and fatigue.

TREATMENT OPTIONS

The goals of HF management are to improve patients' quality of life, increase their ability to perform daily activities, decrease morbidity, decrease hospitalizations, and prolong survival. These goals are accomplished with a combination of pharmacologic and nonpharmacologic interventions.

Pharmacologic Options

Pharmacologic interventions are the traditional cornerstone of HF management. First-line therapy is an angiotensin-converting enzyme inhibitor combined with a β -blocker. Angiotensin-converting enzyme inhibitors reduce the activation of the renin-angiotensin-aldosterone system, whereas β -blockers protect the heart and vasculature from overstimulation of the sympathetic nervous system. Second-line therapy includes an aldosterone antagonist, angiotensin receptor blockers, or a combination of hydralazine and nitrate.^{9,11}

Other pharmacologic therapies include diuretics to relieve fluid retention and digoxin for patients with persistent symptoms or who are unable to tolerate β -blockers.¹¹ Although these therapies have been shown to decrease hospitalizations and mortality rates, many patients remain symptomatic with dyspnea, fatigue, impaired exercise tolerance, and reduced quality of life.^{6,12} The multiple required medications make the regimen complicated, burdensome, and expensive.

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