

cardiovascular disease, usually associated with an intolerance to effort leading to reduced physical activity.

Maximal exercise tests remain the reference because they can rule out contra-indications to retraining, help in drug prescription optimization, measure the maximal capacity in terms of heart rate, maximum power or peak VO_2 . However, they require specific technical and human resources, and therefore imply a financial burden limiting which their repeatability in clinical practice. In addition, they may not be well-tolerated in patients with severe cardiovascular impairment, multiple co-morbidities, and/or the older ones. Moreover, they are not representative of the actual functional capabilities in ecological conditions. As a result, field tests, associated with a collection of physiological parameters, can represent an alternative to assess exercise intolerance in cardiac rehabilitation (CR).

The most used are walk tests, designed to evaluate the safety and exercise capacity in healthy subjects and patients from a speed or walking distance. These tests can be maximal (most often imposed with increasing speed), in order to get an idea of the prognosis (prediction of peak VO_2) or submaximal at a constant speed or a self-selected comfortable speed (6-minute walk, for example). Submaximal tests are considered as valuable benchmarks for measuring the response to a standardized activity typically encountered in everyday life. This performance evaluation can be performed before and after an intervention (surgery, medication, rehabilitation) in order to assess its effects. It can also help to assess the quality of life and could be a tool to personalize training programs.

Field tests have the advantage of being simple to perform, well-tolerated, require few expertise and equipment, and appear well-connected with daily activities. However, they have usually a modest correlation with peak VO_2 , and appear strongly influenced by familiarity and influence the motivation of the subject.

The aim of this update is to describe the main walk tests used in the cardiac rehabilitation, their psychometric properties and interests in clinical practice, performed in addition to or instead of maximal stress tests.

Keywords Cardiac rehabilitation; Assessment; Field tests; Physical capacity

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Therapeutic education and chronic heart failure

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Heart failure (HF) is one of the most common causes of hospitalization and readmission in cardiology with increased morbidity and mortality in symptomatic cases. Patient self management is crucial, but quite complex: follow numerous medical regimens, comply with diet and exercise recommendations, actively engage with clinicians, modify medications and behavior according to clinical changes.

The consequences of inadequate self care are deleterious as inability to manage medications or diet may account for as many as 1/5 admissions for HF (Chin Goldman, 1997) Conversely, improved self-management skills may reduce the odds of readmission at 1 year by 40% (Jovicic Holroyd-Leduc, 2006). Thus, assisting patients to manage their own care is an essential component of chronic HF management.

In a pragmatic approach, it is clear that therapeutic education (TE) contains have to be individualized according to the educative diagnosis in order to identify self care limitations. The reasons for inadequate self care reflected by low adherence rates are

multifactorial: lack of knowledge, skills or commitment, but also socioeconomic, personal, and treatment factors. Clinicians must be aware of these impediments to self care in order to maximize their patients' ability to manage their disease.

Furthermore, knowledge and skills are ineffective without engagement. Clinicians and educators' problematic is to find how to increase patient involvement and engagement with some motivational interviewing techniques.

Therefore, phychiatrist and cardiologist physicians may coordinate specific programs including:

- TE in transdisciplinary programs: group and individual cardiac rehabilitation is supported by training and performance improvement after acute event, with specific behavioral and cognitive approach;

- transversal care as patients with heart failure are older adults with mobility, balance, eyesight, hearing, executive functions impairments;

- longitudinal perspective as interdisciplinary approach must provide appropriate adaptation and coordination of care, ensure adequate patient education to support the acquisition of self care skills, and create safe transitions of care between settings for short and long-term adherence.

Keywords Therapeutic education; Heart failure

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Cardiac rehabilitation in heart failure patients with devices



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Cardiac rehabilitation (CR) for heart failure by systolic dysfunction benefits from a recommendation of level IA by all the scientific societies. The main core components of CR include: evaluation, personalized physical training, patient education, treatments optimization and psycho-social counselling. Heart failure patients are sometimes, and more and more often, implanted by simple or sophisticated pacemakers, resynchronization and/or automatic defibrillators for rhythm and/or hemodynamic indications.

The management of these patients requires the knowledge of the functioning of every device, constraints and limits of these and risks associated to the disease and to the equipment in different situations. The cardiologic evaluation at exercise by a cardiopulmonary exercise test will allow the prescription of the training but it happens that some adjustments of the settings are required. The demonstrated benefits of exercise training are an improvement of exercise capacities, and consequently of quality of life and also a reduction on re-hospitalizations. If education is mandatory for all the heart failure patients, in implanted patients, specific knowledge and behavior modifications were also implemented. Optimization of the treatments needs to take on account the patient profile. Psychological consequences (particularly for implanted cardiac defibrillators) should be managed and possibilities to return to a normal of possible life (including return to work) evaluated.

Accordingly, management of implanted heart failure patients requires a specific skills and cardiologic supervision adapted to the patient situation.

Keywords Cardiac rehabilitation; Exercise; Pacemakers; Resynchronization; Implanted cardiac defibrillators

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