

At home with pulmonary rehabilitation

Riabilitazione respiratoria domiciliare

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Pulmonary rehabilitation results in substantial and clinically meaningful improvements in dyspnea, exercise capacity and quality of life for patients with chronic respiratory diseases such as COPD [1]. There is also evidence indicating that pulmonary rehabilitation reduces subsequent health care utilization [2] and – perhaps – mortality, if the intervention is given in the post-exacerbation period [3]. Other forms of therapy, such as pharmacologic therapy, generally do not reach the magnitude of improvements which are observed with pulmonary rehabilitation. They often don't even come close. This splendid track record is not bad for an intervention that has virtually no effect on resting lung function! This makes sense when one realizes that chronic respiratory diseases often have systemic effects that contribute to overall morbidity and respond to rehabilitation [4].

Now that the overall effectiveness of pulmonary rehabilitation has been established, we still need to find the best ways to implement this therapy. From a societal viewpoint, pulmonary rehabilitation's effectiveness is limited by decreased accessibility for many eligible patients, and from a provider viewpoint its effectiveness is limited by an often-occurring, gradual decrease in exercise capacity and quality of life over time.

It is a fact of life that only a small percentage of COPD patients who might benefit from pulmonary rehabilitation actually get it [5]. Limited funding makes programs scarce and consequently there are not enough programs to fill the needs of the communities. Even if programs are available, they might be too far from the patient, who is often hampered by infirmity and financial problems. Bringing pulmonary rehabilitation into the home setting should help considerably in accessibility.

The gradual decline in outcomes over time probably reflects, in part, a decrease in adherence with the prescribed, post-rehabilitation exercise program. To counteract this, pulmonary rehabilitation

programs now actively promote self-efficacy through encouraging the patient to take charge of his or her health. Incorporating regular exercise training in the home setting beginning early on in the course of pulmonary rehabilitation should help in this regard.

By indirectly addressing these two issues the study by de Oliveira et al. published in this issue of *Multidisciplinary Respiratory Medicine* (pp. 401-408) represents a step forward in optimizing the pulmonary rehabilitation intervention. A safe and effective rehabilitation program taking place mainly in the home setting would potentially reduce the accessibility and cost issues, and incorporating exercise training into the daily home routine might improve long-term adherence. The investigators demonstrated that, following generalized education in an auditorium in the clinic, structured exercise in the home appeared to be as beneficial as traditional, outpatient-based exercise. Both approaches led to statistically significant and clinically meaningful changes in the six minute walk distance and the multidimensional BODE score, and both interventions were significantly better than standard care. Based on a lower drop-out rate, the home intervention was probably at least easier for the patient, if not preferred.

This study and a study by Maltais and colleagues [6] suggest that providing the exercise component of pulmonary rehabilitation at home is as effective as giving it in a hospital- or clinic-based setting. This is a potentially very important finding. But before jumping on the bandwagon, further information is needed:

1. How safe is pulmonary rehabilitation given at home? Patients with COPD often have substantial comorbidity, including coronary artery disease. Although the data are reassuring, the numbers in these two studies are too small to make firm conclusions in this area.
2. Will these results be replicated in other randomized trials in other centers?

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3. How are other outcomes of importance, such as quality of life and dyspnea, affected by this home-based intervention? The goals of pulmonary rehabilitation include more than simply increasing the distance walked over six minutes. The improvement in the BODE score in this trial is encouraging, but that is partially driven by the six minute walk distance, which is one of its components.
 4. Pulmonary rehabilitation programs now stress self-efficacy training, often given one-on-one and tailored to the specific issues of the individual patient. It might be difficult to administer this important component of pulmonary rehabilitation in the home setting.
 5. Are long term adherence and sustainable improvements in outcomes enhanced by exercise training given in the home setting?
 6. What are the costs of this intervention compared to those of traditional programs?
- A good research study always ends up with more questions posed than answers provided. The study by de Oliveira and colleagues does just this, and opens the door for further investigation in this important area.

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