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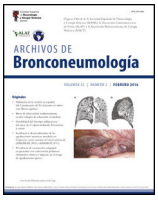

Editorial

Pulmonary rehabilitation and long-term physical activity in the chronic obstructive pulmonary disease patient☆

Rehabilitación pulmonar y actividad física a largo plazo en el paciente con enfermedad pulmonar obstructiva crónica

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Research on physical activity in patients with chronic obstructive pulmonary disease (COPD) has increased exponentially in the last decade. COPD patients have reduced levels of physical activity, they spend more time sitting and lying down than standing or walking, and the intensity of their activity is significantly lower than that of healthy subjects.[1,2] It should be noted that physical activity is a key factor in the prognosis and progress of COPD. Current evidence consistently confirms that reduced levels of physical activity are associated with an increased risk of mortality and hospitalization for disease exacerbations, regardless of whether physical activity is measured by questionnaire or accelerometer.[3]

Interest in sedentary behavior and its effects on patients with COPD has also increased recently. Current data show that the risk of mortality is 4 times higher in subjects who spend more than 8 and a half hours in activities that require less than 1.5 metabolic equivalents (MET), which basically corresponds to sitting or lying down.[4] Although there is still scope for a better understanding of the relationship between the effects of activity and inactivity in COPD, evidence (and common sense) suggests that increasing and maintaining physical activity in COPD patients is a top priority therapeutic goal.

In this respect, the most current definition of pulmonary rehabilitation (PR) incorporates the objective of promoting long-term adherence to behaviors that benefit health, along with improving the physical condition and psychological status of patients.[5] The exercise training component is currently the best approach for improving exercise tolerance (or physical condition) in patients with COPD. However, this improvement does not necessarily mean an increase in the patient's daily physical activity.[6] This shows us that in PR programs, exercise training and the promotion of physical activity should be complementary interventions, with each meeting a specific objective: the first, to improve functional ability, and the second, to change physical (in)activity behavior. In this line, implementing interventions to promote physical activity in PR programs (with a duration of more than 12 weeks) could be the ideal opportunity to modify behavior in COPD patients.[7] Although little evidence is available, experts in the field argue that the combination of exercise training and programs to change behavior should be proposed at different times during the PR program. For example, behavioral change intervention should begin in the final phase of the PR program, when patients have already completed their adaptation to exercise training and are experiencing the improvements that this offers (greater exercise capacity and fewer symptoms).[8] It is also important to note that exercise capacity can be a predictor of response to changes in physical activity in COPD patients. Recent data show that patients with a better baseline functional capacity (>350 m in the 6-min walk test) are more likely to increase physical activity after a 3-month PR program.[9]

Despite this, PR is only offered and implemented in a small proportion of COPD patients, compared with the (almost) universal availability of drug therapy. The reasons for this discrepancy are difficult to comprehend, because both therapies receive a strong international recommendation as the standard of care in these patients. So, is long-term adherence to an active life (outside PR programs) possible in our COPD patients?

Several studies have now reported on the combination of different motivational elements, such as pedometers, mobile phones, and websites associated with the promotion of physical activity – telecoaching, as it is known, used to efficiently increase (and the most individualized way possible) daily physical activity in this group of patients.[10–12] Outcomes in all of these studies were successful, even if behavior change was only maintained in the short term (3–4 months). One could hypothesize that most of these studies were not designed with the understanding of physical activity as a complex and multifactorial behavior.

In this respect, taking into account psychological factors and behavioral science, theoretical models can help explain why some people (both the general population and subjects with chronic diseases, such as COPD) are physically active and others are not.[13] We

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should not forget that knowledge of the determinants of physical activity in COPD is currently restricted to mainly biological, clinical, and functional factors.[3] Moreover, little evidence has been generated on factors more closely associated with motivation and socio-environmental factors that may influence physical activity and behavior change. Thus, the determinants that contribute to physical activity (both in the general population and in patients with COPD) must be identified at different levels, i.e., the individual, social, environmental, and political.[13] Two recent studies have demonstrated the importance of socio-environmental determinants in COPD patients with regard to their physical activity. For example, walking the dog or caring for grandchildren is related to the amount and intensity of physical activity, regardless of the airflow limitation and other clinical parameters.[14] Similarly, COPD patients with an active partner are more active and are more likely to be so.[15]

As a result, it can be observed that only by planning interventions that take into account individual factors, interpersonal and environmental determinants of physical activity,[13] and the barriers and facilitators to this conduct,[16] can the effects of behavior change be maintained in the long term.

In this line, the Urban Training® study[17] was designed as a multicomponent intervention that combined behavioral strategies (such as the motivational interview) in physical training with an increase in daily physical activity using walking routes adapted to the social environment of the COPD patient. This clinical trial was the first to demonstrate effectiveness, as it managed to increase and maintain physical activity after 12 months of follow-up, without no serious safety issues. However, this program was not effective in improving the distance walked in the 6-min walk test, which may be more closely related to specific intense supervised exercise training interventions within the PR framework.

In summary, therapeutic strategies such as Urban Training® may be a solution for (or a possible way of) promoting physical activity in the long term in patients with respiratory diseases. Interventions of this type depend on the setting, and must be adapted to the cultural, geographic, and environmental environment in order to achieve the appropriate design and implementation. In addition, these strategies should be complementary to physical training in PR programs, that (to date) remain the best treatment for increasing the functional capacity of patients with COPD.

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