



CORRESPONDANCE

Community-based pulmonary rehabilitation during acute exacerbation of chronic obstructive pulmonary disease: Pilling up the evidence



To the Editor,

I read with interest the paper of Machado et al. regarding the effects of a community-based pulmonary rehabilitation program (PR) during acute exacerbations of Chronic Obstructive Pulmonary Disease (COPD).¹ Pulmonary rehabilitation is a multicomponent regime known to improve exercise capacity, functional capacity and quality of life and reduce symptom burden and hospitalizations among COPD patients.² Current ERS/ATS statement recommends the implementation of a home-based PR program for exacerbated COPD patients who present at hospital; however the level of recommendation is moderate, since published data is currently limited.³ Moreover, the optimal time point of initiation and the PR program that could provide the most benefit is still to be identified. The study of Machado et al.¹ offers further interesting information in this context. The severity of obstruction and its potential impact on the outcomes of the PR program would be an interesting addition to the study results. Although the study sample is rather small, so subject categorization according to the severity of the disease is probably not possible, it would be interesting to know whether the effect of this community-based PR program was similar among COPD patients with moderate, severe and very severe obstruction. Similarly, this data would be useful for exploring characteristics of drop-outs, since published data in PR studies indicate that those patients who drop out have more severe disease overall, than the ones who complete the intervention.⁴

The lack of characterization of the severity of COPD acute exacerbation (AECOPD) can be reported as a limitation of Machado et al. study.¹ According to Global Obstructive Lung Disease (GOLD), AECOPD is classified as mild when treated with extra short-acting bronchodilators, as moderate when treated with short-acting bronchodilators plus antibiotics and/or oral corticosteroids, while in severe AECOPD patient requires hospitalization or visits the emergency room.⁵ Since participants in both groups (experimental and control) were identified by pulmonologists at hospital, one would expect that they suffered from severe or moderate-to-severe exacerbation. However, the data from the medication usage is rather contradictory; no extra bronchodilation was given to any of the patients, while the use of antibiotics and/or oral corticosteroids tend to differ between the groups. It is

unlikely that the results of this study would have been different if medication usage was similar between the groups. Nevertheless, accurate characterization of the severity of AECOPD would offer valuable information as to who can receive a community-based PR program during exacerbation and who would benefit the most.

The authors have to be commended for offering a multidimensional program including psychoeducational and nutritional support, respiratory training, muscle strengthening and aerobic training, which they describe in detail. However, the exact point in time for starting PR has to be accurately defined. Published data indicate that PR outcomes differ when it is initiated early or late after AECOPD onset,⁶ so this is an issue that has to be further addressed in detail.

In conclusion, a community-based multidimensional PR program seems to be safe and effective for COPD patients during acute exacerbation. More prospective, randomized trials are needed in order to define the optimal outpatient PR regimen and when it should be initiated, according both to the severity of COPD and the severity of acute exacerbation.

Conflict of interest

None.

Acknowledgments

No funding received.

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19 June 2019

Available online 25 September 2019

<https://doi.org/10.1016/j.pulmoe.2019.07.005>
2531-0437/

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Effects of a community-based pulmonary rehabilitation programme during acute exacerbations of chronic obstructive pulmonary disease - A quasi-experimental pilot study. Authors' reply



We are grateful to Dr. Boutou¹ for her reassuring letter about our manuscript entitled "Effects of a community-based pulmonary rehabilitation programme during acute exacerbations of chronic obstructive pulmonary disease – A quasi-experimental pilot study."² The most appropriate time point to begin pulmonary rehabilitation during an acute exacerbation of chronic obstructive pulmonary disease (AECOPD) and who can benefit the most from this comprehensive intervention is indeed a similar "Holy Grail" on how to maintain the benefits after pulmonary rehabilitation.³ It is worth noting that in the latest Cochrane review of Puhan and co-workers,⁴ from the 20 studies included, 13 were conducted with inpatients,⁵⁻¹⁷ although 80% of the AECOPD are managed on an outpatient basis,¹⁸ when patients are integrated in the community. This relative lack of research exploring the benefits of pulmonary rehabilitation when patients are integrated into their daily routines and environment and supported by their loved ones, might be "blurring" our understanding of the role of pulmonary rehabilitation considering the whole picture of the AECOPD. Our pilot study contributed to clarify this role, by showing that pulmonary rehabilitation is a safe, feasible and effective intervention for these patients, however, more studies following robust methodologies are urgently needed.

Another important aspect that might contribute to misunderstanding the role of pulmonary rehabilitation during AECOPD is the healthcare context of each country. For example, in the letter of Dr. Boutou¹ her understanding was that because our patients were identified by pulmonologists at the hospital, patients would be suffering from severe or moderate-to-severe exacerbations. Yet, in our healthcare system, when an AECOPD occurs most patients go to the hospital to be assessed by a doctor and have their medication adjusted, and it does not necessarily mean that they are having a severe exacerbation. In fact, a wide variety in the severity of exacerbations will come up on a daily

basis at the hospital, hence different medication usage. Most cases are sent to be managed on an outpatient basis and it was those patients that were recruited for our study. Although it is unlikely that different responses would have been obtained about the pulmonary rehabilitation based on different medication usage, which would have meant stratifying patients per exacerbation severity, it is important that future studies explain in a more detailed manner the healthcare context where recruitment occurs to avoid misinterpretations of the clinical profile of patients included in the studies.

We agree with Dr. Boutou¹ that timing is key to determining the success of an intervention. In our study, participants' first assessment was performed within 48 h of the diagnosis of AECOPD and the intervention started within 72 h. Our results further add to those of Matsui and colleagues showing that, for patients treated in the community, early interventions may result in improvements in muscle strength, impact of the disease and symptoms.¹⁹

In fact, in our study, an analysis per severity of airflow obstruction was not performed. Although lung function is an essential component of the diagnostic of COPD, no significant relationship between lung function and response to pulmonary rehabilitation has been found in patients with stable COPD.²⁰ Moreover, not all severely obstructed patients are highly symptomatic and limited in their daily living and some of those with mild obstruction are also known to experience high symptom burden and activities limitation.^{21,22} It is therefore, unlikely that based on the restriction of the airflow obstruction differential responses would have been obtained.²²

In conclusion, community-based pulmonary rehabilitation seems to benefit patients with AECOPD but further research on the multidimensional assessment of patients, identification of who can most benefit, time of initiation and best regimen following a person-centred approach²² are areas that need future rigorous research.

Acknowledgements

This work was funded by Programa Operacional de Competitividade e Internacionalização – PO CI, through Fundo Europeu de Desenvolvimento Regional - FEDER (POCI-01-0145-FEDER-007628; PO CI-01-0145-FEDER-028806), Fundação para a Ciência e Tecnologia (PTDC/DTP-