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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.

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