



## LETTER TO THE EDITOR

### Response to the letter from Rodrigues M and Vaz IM regarding the article “Effectiveness of a preoperative breathing exercise intervention in patients undergoing cardiac surgery: a systematic review”



### Resposta à Carta ao Editor sobre o artigo «Eficácia de uma intervenção baseada em exercícios respiratórios em pessoas a aguardar cirurgia cardíaca: uma revisão sistemática da literatura»

To the Editor:

We thank Drs. Rodrigues and Vaz for their interest in our paper recently published in the *Journal*,<sup>1</sup> in which we determined whether patients waiting for cardiac surgery who undergo preoperative breathing exercises have better postoperative outcomes, such as respiratory parameters, postoperative pulmonary complications, and length of hospital stay. However, we respectfully disagree with their arguments.

We do not concur with the authors’ opinion that the terms used for the literature research, as well as some of those used in the text, are vague. As we pointed out in our article, the search strategy to perform the systematic review combined both indexed and free-text terms.<sup>2</sup>

Our intervention was accurately defined as “a preoperative breathing exercises intervention”.<sup>1</sup> We draw particular attention to the use of the indefinite article ‘a’ in our paper, which is of particular importance. In our work, we set out to understand the impact of *any* intervention that involves preoperative breathing exercises compared with interventions that do not. It should be remembered that ‘Preoperative Exercise’ is a MeSH term defined as “Various physical exercises implemented before a surgery designed for better treatment outcome”,<sup>3</sup> while ‘Breathing Exercises’ is also a MeSH term, defined as “Therapeutic exercises aimed to

deepen inspiration or expiration or even to alter the rate and rhythm of respiration”.<sup>4</sup> Their entry terms are: Exercise, Breathing; Respiratory Muscle Training; Muscle Training, Respiratory; and Training, Respiratory Muscle.<sup>4</sup> These concepts have been used by other authors in various studies.<sup>5–7</sup> Outcomes are also clearly defined as respiratory parameters, length of stay and postoperative pulmonary complications. As a fundamental concept, the authors considered ‘respiratory parameters’ to be a self-explanatory key-word,<sup>1</sup> as have other authors.<sup>8–10</sup> However, we agree that not all readers may be familiar with the terms, so we take this opportunity to clarify: the Cambridge Dictionary defines ‘parameter’ as “a set of facts or a fixed limit that establishes or limits how something can or must happen or be done”.<sup>11</sup> Classic respiratory parameters, according to Vallverdú et al.,<sup>12</sup> are vital capacity, maximal inspiratory pressure and expired volume per minute. ‘Length of stay’ is a MeSH term defined as “The period of confinement of a patient to a hospital or other health facility”<sup>13</sup> and ‘postoperative pulmonary complications’ is a free-text term derived from ‘Postoperative Complications’, a MeSH term defined as “Pathologic processes that affect patients after a surgical procedure. They may or may not be related to the disease for which the surgery was done, and they may or may not be direct results of the surgery”.<sup>14</sup>

The phrases ‘respiratory performance’ and ‘mobilization scheme’ are used in the Results and Discussion sections, linked to studies that are well referenced. We strongly recommend that anyone with a question related to the operationalization of these concepts should read the respective article.

We would like to state that the questions posed at the end of the discussion, highlighted by the authors, were intended to promote reflection among researchers who may have an interest in this field. The results can only be understood by looking at the entire text, tables and figures. A piecemeal reading leads to an interpretation with a high risk of bias. Our conclusion is clear: “A preoperative breathing intervention on patients undergoing cardiac surgery may help improve respiratory performance after surgery, reduce postoperative pulmonary complications and hospital length of stay. However, more trials are needed to support and strengthen the evidence”.<sup>1</sup>

We agree with the authors that breathing exercises include a wide range of interventions. In our article, we did not focus on a specific intervention, but we accept that

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future research on such interventions is important. In fact, we mentioned this in our conclusions and, on this point, we totally agree with the authors and with the studies they cite.<sup>15,16</sup>

## Conflicts of interest

The authors have no conflicts of interest to declare.

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