

We thank the reviewers for meticulously reviewing this manuscript and addressing key questions which gives us the opportunity to improve the manuscript further.

**Reviewer #1:**

**Scientific Quality: Grade B (Very good)**

**Language Quality: Grade C (A great deal of language polishing)**

**Conclusion: Major revision**

**Specific Comments to Authors: Congratulations to authors for their effort to write this manuscript**

Reply: Thank you very much. We are glad to hear these positive comments.

To ensure language quality, we asked professional English editing service. The certificate has been attached.

**Reviewer #2:**

**Scientific Quality: Grade B (Very good)**

**Language Quality: Grade B (Minor language polishing)**

**Conclusion: Minor revision**

**Specific Comments to Authors: Overall, the article is informative and well written, and easy to understand, but there are some minor changes required to make it more comprehensive.**

- 1. Please clarify how to control and train breathing in the materials and methods, which is very important for this research.**

Reply: Thank you for this suggestion. We revised the materials and methods as follow:

*Materials and methods, CT scan section, Line 5.*

*Instructions for full inspiration were given using an automatic voice system to keep the degree of inspiration constant.*

- 2. Please confirm whether the lung CT volume measurement based on soft tissue reconstruction algorithm is correct.**

Reply: Yes, it is correct. We used soft tissue reconstruction algorithm for measuring lung CT volume, the soft tissue reconstruction algorithm has less noise than the lung reconstruction algorithm. Less noise increases the accuracy of automatic organ segmentation.

**3. Please expand the discussion of the relationships between lung volume change and cardiac cross-sectional area in chronic thromboembolic pulmonary hypertension and in control subjects. This is exactly the point worth discussing. And reflected in the abstract of the paper.**

Reply: Thank you for this comment. We expanded the discussion and revised the abstract as follow:

*Discussion, paragraph 4.*

*The decline in heart size seen with CTEPH is most likely related to the improvement in right ventricular function and decreased right ventricular end-diastolic and end-systolic volumes with medical therapy or BPA. Echocardiography and RHC show all these improvements at follow up. Cardiac CSA, measured in the transverse plane, is affected by the phase of ventilation. Inhalation stretches the heart in the vertical plane and reduces cardiac CSA, whereas expiration lifts the diaphragm and pushes the heart upward, increasing cardiac CSA[11]. The control group in this study had a significant negative correlation between heart size change, as measured by CSA, and lung volume change. However, the correlation between these changes disappeared in the CTEPH cohort. We initially speculated that cardiomegaly was a factor in lung volume decline in the CTEPH group. In addition to the physiologic increase in cardiac CSA caused by poor inspiration, the increase in the right ventricle and right atrium volume caused by exacerbation of right heart failure would compress the lung parenchyma, leading to a decrease in lung volume. However, we found the opposite to be true: lung volumes decreased in the CTEPH group despite a reduction in heart size. In other words, a reduction in heart size that is associated with improved heart function can occur simultaneously with a loss of lung volume in CTEPH. An additional explanation of this negative correlation between heart size and lung volume is that, in normal individuals, more vigorous inspiration when measuring TLC reduces venous filling of the right atrium. In patients with CTEPH, there should be less of an effect because these individuals already have volume overload in the right heart.*

**4. Please remove some symbol errors in the manuscript (Line 10 on page 10) .**

Reply: Thank you very much. We have corrected it.