Respond to reviewers' comments

Reviewer #1:

N0. 1: The authors have demonstrated that ERAS-based respiratory function training might help elderly patients who have abdominal surgery to have less pulmonary complications after surgery. In China, pulmonary complications exactly threaten the recovery of older patients. The authors provide a more thorough and detailed analysis at the effects on ERAS-based respiratory function training on older patients' ability to prevent pulmonary complications. This study is interesting and valuable and deserves to be published.

Answer: Thank the reviewers for giving the work their approval. I hope readers might use it as a reference.

Reviewer #2:

N0. 1: Dear authors! am very happy getting the chance to review your manuscript. Here is my evaluation: The title reflects the main subject thesis of the manuscript. The abstract summarize and reflects the work described in the manuscript. The key words reflects the focus of your manuscript, it also adequately describes the background, present status and significance of your study. The manuscript describes methods (data analysis) in an appropriate way. Research objectives are achieved by the experiments and statistical analysis used in this study. The manuscript interprets the findings adequately and appropriately, highlighting the key points concisely, clearly and logically. Findings and their applicability/relevance to the literature are stated in a clear and definite manner. Discussion is accurate and discusses the paper's scientific significance and relevance to clinical practice sufficiently. The figure and tables are sufficient, in good quality and appropriately illustrative of the paper contents. The manuscript cites appropriately the latest, important and authoritative references in the introduction and discussion sections. The manuscript is well, concisely and coherently organized and presented. Style, language and grammar is accurate and appropriate. Authors prepared the manuscript according to the appropriate research methods and reporting. The manuscript meets the requirements of ethics. Best regards! Your reviewer

Answer: We appreciate the reviewers' positive comments about our study, and we are sure that once the publication is published, it will be extensively cited and downloaded.

Reviewer #3:

N0. 1: - rewrite the abstract by correcting the grammar - Correct your introduction section elaborate the problem and its consequences more - Methods are not specific enough

Answer: Thank you for the reviewer's advice and comments. Based on all reviewers' remarks, we carefully revised the article. Using the QuillBot (https://quillbot.com/), we also performed sophisticated polishing. After that, Professor Wang Xinyu reviewed, checked, and validated that there were no grammatical issues. We carefully revised the

introduction and elaborated the problems to be solved in light of the feedback from each reviewer. We carefully rewrote the description in the method part in response to the reviewer's suggestions because we were careless and it might not be complete.

Reviewer #4:

I appreciate getting the chance of reviewing your valuable manuscripts. I tried to consider some comments which might improve your study. Please check my comments and revise them if you consider them necessary.

1. You mentioned a case group as an intervention group. I considered "ERAS group" might be appropriate in your study. Please check and revise them.

Answer: I appreciate the reviewer's advice. We wholeheartedly support the reviewer's suggestion to replace "intervention group" with "ERAS group."

2. One of the primary endpoints of your study, respiratory infection rates were lower in the ERAS group than in the control group. But, it was not the breakthrough finding. You should add the originality of this finding in the discussion part. Please check and revise them.

Answer: I appreciate the reviewer's comments. We are extremely grateful for the reviewer's suggestion. In the discussion part, we will go into more detail on the "lower respiratory infection rate in the ERAS group".

3. Table 1 was shown the baseline characteristics of patients. Table 2 provides the variation of the surgery. There were no percentages written in this table. How did you make sure of the statistical differences between the two groups or among the differences in surgical variations? Please check and add the appropriate information in your text and table.

Answer: I appreciate the reviewer's advice. Our statistical oversight prevents us from comparing various surgical procedures. We carefully changed the manuscript in response to the reviewer's suggestions. We have added corresponding statistical results in the table. Mann-Whitney U test was used to compare the type of surgery.

4. Table 3 includes only all patient's changes in clinical parameters. How did those parameters differ between the ERAS group and the control group? Please check and revise them.

Answer: I appreciate the reviewer's suggestion. We fully agree with the reviewers' comments. We made more changes and additions to the table, added baseline values, and then showed the data for the control group and the ERAS group, respectively.

5. Table 4 did not provide information on how you compared the data between the two groups. Please check and revise them.

Answer: We appreciate the reviewer's confusions about this statistical approach. We did not go into greater detail about the statistical methods below Table 4 because of the rule against duplication of layout specifications and content requirements. Yet, the statistical method has clear instructions. Such as "In order to compare key outcomes between the

case and control groups, the Chi-square test was also applied. The primary result was compared between the case group and the control group, both of which had spent more than two days in the hospital prior to surgery, using the Fischer precision test. Mann-Whitney U test was used to compare the length of postoperative hospital stay between the two groups (secondary outcome).".

Reviewer #5:
I read with interest the article titled 'Analysis of the impact of ERAS-based respiratory function training on older patients' ability to prevent pulmonary complications after abdominal surgery'. This article is a retrospective review of 231 patients who underwent abdominal surgery to find the impact of ERAS respiratory training on the overall outcome in terms of respiratory complications and length of stay in hospital. Though the overall concept is good, some shortcomings of this article were noted, which need to be addressed.
1. Since this is a retrospective study, compliance of the study subjects to the preoperative ERAS regimen cannot be confirmed. This forms a significant bias in the data analysis and is a major flaw in the study.
Answer: Thanks for the reviewers' suggestions. One major disadvantage or limitation of retrospective analysis is the difficulty in obtaining patient compliance data. Prospective cohort studies can be used to further evaluate compliance outcomes.

2. In exclusion criteria, did you exclude all patients who needed mechanical ventilation after surgery? If yes, why? What were the criteria for postoperative mechanical ventilation in those patients who did not have pre-existing lung pathologies?
Answer: I appreciate your questions. We did not include this in the inclusion and exclusion criteria because none of our 231 patients required mechanical ventilation after surgery. Theoretically, individuals who did require postoperative mechanical ventilation and did not have any perioperative interventions or surgeries that might impair lung function should be included in the study. The inclusion of such individuals might significantly minimize bias since postoperative pulmonary problems may also result in mechanical ventilation.

The criteria for postoperative mechanical ventilation: despite intensive therapy, the disease kept getting worse; awareness disturbance; severely aberrant breathing patterns, such as respiratory rates of greater than or equal to 35 to 40 beats per minute or less than 6 to 8 beats per minute, irregular breathing rhythm, or absent or weak spontaneous breathing; Following complete oxygen therapy, blood gas analysis revealed significant ventilation and/or oxygenation disorders: arterial partial oxygen pressure 50mmHg; Carbon dioxide arterial partial pressure gradually rises; pH changes quickly.

3. How was the sample size or study duration decided in this observational study? Is it possible to do a possible to do a post- hoc analysis of the power of the study to detect difference in respiratory complications attributable to ERAS based respiratory training?

Answer: Thanks for the reviewers' comments. My response to the question of the sample size for this study is as follows. The sample size was unknown and unchangeable prior to the retrospective analysis because this study was a retrospective study. The number of elderly patients who underwent abdominal surgery throughout the time period was used to determine the sample size.

pre-hoc analysis and post-hoc analysis is seldom given much thought in retrospective analysis research since this research do have evident drawbacks when compared to prospective analysis or RCTS. We refer to this as a pre-hoc analysis if the content and methodology of your statistical analysis were decided upon before to the project's completion (including data collecting). A post-hoc analysis occurs if the statistical analysis's methodology and subject matter are chosen after the data have been collected. When looking at the validity of medical evidence, the analytical process is predetermined, and the conclusions are trustworthy. They are unreliable if they are not predetermined and are only examined after the fact. Post-hoc analysis may use statistical methods or indicators with smaller P-values and more significant impacts, which frequently introduces subjectivity bias: poor findings are purposefully not investigated, which gives people a misleading impression. In fact, retrospective analysis can also serve as a kind of post-hoc analysis.

4. Kindly elaborate on the respiratory training methods used in the preoperative period as these form the crux of clinical application of this study. What was the end point seen by the study investigator group to fulfil patient for inclusion in the case group.

Answer: Thanks for the reviewers' comments. The principles and procedures of respiratory function training will be thoroughly explained in the section on methods, and we will also utilize a flow chart to elaborate so.

In our investigation, the anticipated endpoint events included postoperative patient deaths, postoperative discharges, and hospital stays longer than 30 days. The study included elderly patients admitted for abdominal surgery in April 2019 and September 2021. The ERAS group received the ERAS-based concept of respiratory function training in addition to the conventional respiratory function training technique, whereas the control group received the abovementioned traditional respiratory function training approach. It is important to emphasize that the ERAS-based respiratory function training is not a unique training method, but a respiratory function method, or a breathing training mode, based on the conventional respiratory function training method combined with the concept of ERAS.

5. Please insert a reference or a table citing the Borg scale used

Answer: Thanks for the reviewers' suggestions. No reference to "the Borg scale" was inserted as a result of our carelessness. Following the reviewer's suggestion, we included this reference section (For example **reference 8**).

6. In table 3, The details must include columns for total number of patients, case group and control group for the duration – baseline and daily till fourth day to

bring data in perspective.

Answer: Thanks for the reviewers' suggestions. The design of Table 3 does have a significant flaw, as two reviewers have pointed out. We carefully revised the form in response to reviewers' suggestions, and we think that they will be satisfied with the results.

7. Kindly mention column percentages in Table 4 to actually reflect the number of patients who had respiratory infections, since it seems that more patients with raised counts, alteration in lung x-ray, antibiotic use were present in case group.

Answer: Thanks for the reviewer's suggestion. We have increased the column percentage in Table 4. You can misunderstand something after reading our table. The data shown in the table is the number of cases that do not occur. "No." means not, not number. In order to avoid misunderstandings, we will correct them one by one.

8. Why only FEV1/FVC has been taken to test PFT as it reflects the obstructive component and even restrictive defects may be present in respiratory infections?

Answer: Thanks for the reviewer's comment. FEV1/FVC is the most commonly used measure of pulmonary function. FEV1/FVC is a secondary statistical result and a commonly used evaluation index in clinical practice. In addition, in reading other literatures, these literatures only use the index of FEV1/FVC. Furthermore, in our study, difficulty expectorating, which was a contributing factor to obstructive ventilation disorder, was the major factor impacting lung function and pulmonary complications. Therefore, we concentrated on the measures of expectoration in older surgical patients in the method design section. In order to highlight the focus and its relevance to the research, we believe that FEV1/FVC is OK. Other indicators related to restrictive ventilation disorders are optional.

9. There are some language errors which need to be corrected. These are highlighted in the manuscript with comments. Kindly revise the manuscript as per the comments given here and in the manuscript to improve it's significance and quality. Best wishes

Answer: Thanks for the reviewer's comment. Based on all reviewers' remarks, we carefully revised the article. Using the QuillBot (https://quillbot.com/), we also performed sophisticated polishing. After that, Professor Wang Xinyu reviewed, checked, and validated that there were no grammatical issues. Finally, I would want to express my gratitude to the reviewer for discovering and correcting the manuscript's linguistic issues.