

Comments to the Author

I would like to thank the section editor for providing me the opportunity to review the manuscript entitled "Effect of hypoxia conditioning on physical fitness in middle-aged and older adults - a systematic review and meta-analysis" To my knowledge, no similar systematic review and meta-analysis has been done, so this paper has the potential to make a new contribution to the field. That said, I have offered some specific input below for the author/s to consider, which I hope they will find helpful.

I wish the author/s all the best with this manuscript.

Abstract:

1. The abstract structure should include a conclusion in addition to the background, methods, and results. The conclusion should briefly state the main findings of this study, its academic contributions and practical applications, as well as potential research limitations and future research directions.

Introduction:

1. Although the article mentions that "whether hypoxic conditioning (HC) is more effective than regular exercise remains controversial," it does not clearly identify the limitations and points of contention in current research. It is recommended to provide a preliminary discussion on the possible reasons for inconsistencies in previous studies (why some studies support hypoxic conditioning (HC) while others do not show significant effects). This discussion could also serve as a basis for subsequent moderator analyses.
2. It is suggested that more literature should focus on key studies related to hypoxic conditioning (HC), particularly its core mechanisms (such as erythropoiesis and mitochondrial adaptation). The importance and value of research in this field can be more effectively highlighted.

Materials & Methods:

1. In addition to the forest plot, publication bias can also be assessed using several tools, such as

Egger's Test, or Orwin's Fail-safe N. Please consider supplementing the analysis with these methods or explaining why they were not used. If other tools were used, these should also be stated in the Results section.

Results:

1. The study mentions conducting a sensitivity analysis. It is recommended to report the results, such as whether the statistical outcomes change after removing high-heterogeneity studies.
2. Following the previous question-Among the analyses of functional outcomes, muscle strength, maximal power output, VO₂max, VO₂peak, and exercise workload, why was sensitivity analysis conducted only for VO₂peak? If necessary, it is recommended to provide additional justification or extend the analysis to other variables.

Discussion:

1. Although the purpose of the study is consistent with the discussion content, there is less discussion on other physical fitness indicators (including the results of subgroup analysis) except for VO₂peak. There is a lack of explanation on the mechanism and it is suggested that it can be supplemented.
2. In the study limitations or future research section, this study excluded non-English articles but did not provide a reasonable explanation. This may lead to selection bias, as non-English studies might contain relevant data. Additionally, the discussion on future research directions could be more specific, such as recommending the use of more rigorous randomized controlled trial (RCT) designs to improve the reliability of existing evidence.

Figure1

1. According to the PRISMA 2020 flow diagram template for systematic reviews, the authors distinguished "Identification of new studies via databases and registers" and "Identification of new studies via other methods", so the flow chart should be produced from these two parts. Please confirm and correct.