

Peer Review

# Review of: "Endurance Training Restores Ageing-Impaired Lysosomal Biogenesis Factors in Rest and Response to Acute Exercise in Rat Skeletal Muscle"

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**Reviewer Comments on Manuscript: Endurance Training Restores Ageing-Impaired Lysosomal Biogenesis Factors in Rest and Response to Acute Exercise in Rat Skeletal Muscle**

## ***1. Novelty and Overall Quality***

The study's focus on the decline in lysosomal function during aging and the potential modulatory effects of a single session and a period of endurance training is interesting and has received limited attention in the literature. The methodology and findings are well-presented, and the overall structure and content of the manuscript meet a good standard.

## ***2. Clarification of Study Objectives in the Abstract***

The study essentially consists of three interconnected investigations:

- a) The lysosomal response to a single session of endurance exercise
- b) The lysosomal adaptation to a period of endurance training
- c) The adaptation in response to endurance exercise following training

However, the abstract does not clearly reflect these objectives, and this needs to be revised accordingly.

## ***3. Findings in the Abstract***

The abstract presents the findings related to both a single session and a period of endurance training. However, the results regarding the effect of a single session of exercise at the end of the training period (i.e., "adaptation in response") have not been reported. This should be included for completeness.

#### ***4. Conclusion in the Abstract***

The conclusion section of the abstract primarily emphasizes the adaptations following a period of training. However, since the findings from a single session of exercise also provide valuable insights and align with the study objectives, they should be appropriately reflected in the conclusion.

#### ***5. Rationale for Soleus Muscle Selection***

The introduction does not adequately explain the significance of the soleus muscle (a slow-twitch muscle) in the aging process and, more specifically, its lysosomal function. The rationale for selecting this muscle should be explicitly stated in the introduction.

#### ***6. Documentation of Exercise Protocol Design***

The manuscript does not provide references or supporting evidence for the design of the single-session endurance exercise and the three-week training program. It is unclear whether these protocols were developed by the researchers or adopted from previous studies. Relevant documentation and citations should be provided.

#### ***7. Timing of Tissue Collection in the Single-Session Exercise Group***

The rationale behind performing tissue collection three hours after the single-session endurance exercise is not explained. A justification for this timing should be provided, supported by relevant references.

#### ***8. Muscle Weight Measurement***

If the weight of the soleus muscle was measured, it should be included in the results section and discussed accordingly in the discussion section.

#### ***9. Inclusion of More Recent References***

The most recent references in the manuscript are from 2022. To ensure the study is well-grounded in the latest research, newer studies should be incorporated into the reference list.

## **10. Overall Assessment**

The manuscript presents a well-structured and insightful study on the decline in lysosomal function during aging and the effects of endurance exercise. The study's objectives, methodology, and findings are valuable contributions to the field. With the minor revisions suggested above, the manuscript has the potential for publication.

## **Declarations**

**Potential competing interests:** No potential competing interests to declare.