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The Effect of 8 Weeks of High-Intensity Interval Training on GLUT4 and GALR2 Gene Expression in Skeletal Muscle Tissue of Obese Female Rats with Type 2 Diabetes

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1. Round 1

1.1 Reviewer 1

Date: 04 June 2024

Reviewer:

The claim "Obesity rates have increased across all ages and both sexes, regardless of geographic location, ethnicity, or socioeconomic status" lacks supporting references. Consider adding a recent source that provides data on global obesity trends to strengthen this point.

The description "40 female Wistar rats, aged 8 weeks with an average weight of 200 grams" is clear, but it would benefit from a justification for the choice of female rats, considering sex differences in metabolism and diabetes susceptibility.

The explanation of treadmill familiarization "10 minutes each day at 0° incline and 8 m/min" could be expanded to include why these specific settings were selected and how they align with prior research.

Clarify how the "progressive incremental test" to determine Vmax relates to ensuring consistent exercise intensity across groups. Consider discussing potential variability in rat performance.

The explanation "Increased GLUT4 translocation to the plasma membrane through two mechanisms" should detail how these mechanisms are distinct from insulin-mediated pathways, as this distinction is crucial for understanding exercise's unique effects.

Authors revised the manuscript and uploaded the updated document.

1.2 Reviewer 2

Date: 15 June 2024

Reviewer:

The discussion about "diet playing a crucial role in the induction of diabetes in humans" needs a more nuanced analysis. Include details about specific dietary components (e.g., sugar vs. fat) and their differential impacts on insulin resistance.

The sentence "Given the limited information on the effect of 8 weeks of high-intensity interval training on the gene expression of GLUT4 and GALR2" should provide a brief summary of the existing studies or gaps to better frame the novelty of the research.

The values reported for GALR2 and GLUT4 need to be contextualized. Discuss if these mean values are consistent with or differ significantly from other studies, providing references if possible.

The statement "High-intensity interval training increases insulin sensitivity" should integrate more biochemical pathways, such as the role of AMPK or mitochondrial adaptations, to provide a comprehensive explanation.

The sentence "Exercise may enhance galanin secretion" is intriguing but would benefit from a deeper exploration of the mechanistic pathways, particularly in the context of skeletal muscle function.

Authors revised the manuscript and uploaded the updated document.

2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.

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