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Muscle Biology 2023 Conference <muscle-biology@ufl.edu>
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To: Paulo Henrique Caldeira Mesquita <phc0003@auburn.edu>

Thank you for submitting an abstract to the 2023 Advances in Skeletal Muscle Biology in Health and Disease Conference.

Below is the confirmation of your submission:

Name of Submitting Author

Paulo Mesquita

Email of Submitting Author

phc0003@auburn.edu

Submitting Authors University or Affiliation

Auburn University

Session Topic (drop down list)

Exercise and Systems Biology

Abstract Title

CAN PREVIOUS RESISTANCE TRAINING ENHANCE MITOCHONDRIAL ADAPTATIONS TO ENDURANCE TRAINING?

Author List

Mesquita, Paulo H.C.; Godwin, J.S.; Ruple, B.A.; Sexton, C.L.; McIntosh, M.C.; Osburn, S.C.; Mueller, B.; Kontos, N.; Libardi, C.A.; Young, K.C.; Roberts, M.D.; Kavazis, A.N.

Abstract

BACKGROUND: Resistance training (RT) is widely recognized as an effective method to increase strength and muscle mass, while endurance training (ET) is commonly used to achieve cardiovascular and mitochondrial adaptations. Recent reports have demonstrated that a short period of ET can augment RT adaptations. However, whether previous RT could also lead to enhanced adaptations to ET is currently unknown. Therefore, the goal of this study was to investigate the impact of RT on skeletal muscle mitochondrial adaptations following ET.
METHODS: 23 young untrained males were recruited and divided into two groups: 1) ET-only (n=12), which performed 7 weeks of high-intensity interval training; 2) RT+ET (n=11), which performed 7 weeks of RT twice weekly before initiating 7 weeks of the same endurance training performed by ET-only. Muscle biopsies were obtained from participants' vastus lateralis (VL) before (PRE) and after (POST) ET. Muscle homogenates were used to determine the maximal activity of citrate synthase (CS) and immunohistochemistry was used to determine fiber type-specific mitochondrial content through staining of TOMM20. Furthermore, CS activity and mitochondrial content changes are presented as "raw" values (relative) and normalized to VL thickness and fiber cross-sectional area (absolute), respectively, to account for differences in muscle size.
RESULTS: Maximal CS activity change in response to ET was different between groups (relative: 36.6%, p=0.069

(trend); absolute: 40.1%, p=0.016), with ET-only group showing an increase in activity while RT+ET showed a decrease. Mixed-fiber mitochondrial content followed a similar pattern (relative: 28.1%, p=0.033; absolute: 31.7%, p=0.020), which was mainly driven by differences in type II fibers (relative: 40.1%, p=0.005; absolute: 44.6%; p=0.004).
CONCLUSION: Our results showed that performing RT prior to ET negatively impacted mitochondrial adaptations to ET in young untrained males.

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Trainee Travel Awards (Pre and Post-Doctoral Associates ONLY)

- I am a Trainee and would like my poster judged for a Trainee Travel Award