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Effects of Glutathione and Age on Muscle Performance during a Chronic Exposure of Stretch-Shortening Contractions: 990: May 30 4:45 PM - 5:00 PM

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The effect of glutathione depletion on the ability of skeletal muscle to adapt to a chronic exposure of high-intensity mechanical loading is not known.

PURPOSE: Investigate the effects of glutathione depletion (via L-Buthionine Sulfoxamine (BSO)) and aging on the ability to adapt functionally to a chronic stretchshortening contraction (SSC) exposure.

METHODS: The left dorsiflexor muscles of young (12 wks age, N = 16) and old (30 mo age, N = 16) vehicle and BSO treated male Fischer 344 x Brown Norway rats were exposed 3x/week for 4.5 weeks to a protocol of 80 maximum SSCs per exposure *in vivo.* Performance was characterized by isometric performance, negative and positive work, and peak eccentric force and minimum force during the 4.5 week exposure period.

RESULTS: The isometric force, peak eccentric force, and negative work were not statistically different between groups before exposure; however, minimum force and positive work were significantly higher in young than old rodents ($P < 0.05$ respectively). Age negatively affected the ability of the rats to respond to the chronic exposure, irrespective of treatment in all parameters except isometric force. Old rodents exhibited significantly less values of minimum force, peak force, negative work, and positive work ($p < 0.05$ respectively) at the end of the exposure period than their younger counterparts.

CONCLUSIONS: Age negatively affected the dynamic performance measures, but not the isometric performance after a chronic exposure of SSCs. However, glutathione depletion did not affect the response profile of the two age groups during the chronic exposure.