2C10-3 Effects of aging on mechanical vasodilation of the feed arteries of rat soleus muscle
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Purpose: This study sought to determine the effects of aging on the threshold and amplitude of mechanical vasodilation in the feed arteries of rat skeletal muscle.

Methods: The threshold and amplitude of mechanical vasodilation were measured in caged control (20 weeks of age) and aged (70 weeks of age) rats. Soleus feed arteries were isolated and mounted on a micropipette in a sealed chamber. Arteries were pressurized to 80 mmHg. External pressure (0-250 mmHg) was applied for 1 s as a series of 1-10 repeated 1-s pulses with 1-s intervals between each pulse. Luminal diameter was measured under an inverted microscope.

Results and Discussion: The threshold transmural pressure of mechanical vasodilation was 0 mmHg in both the control and aged rats. The amplitude of mechanical vasodilation of the feed arteries in aged rats (21.8 ± 2.3%) was not significantly different from that in the control rats (26.2 ± 1.5%). The amplitude of mechanical vasodilation was decreased significantly (p<0.001) following removal of the endothelium by air. These results indicate that neither the threshold nor the amplitude of transmural pressure of mechanical vasodilation of the soleus feed arteries was altered by aging.

Key words: mechanical vasodilation, transmural pressure, aging, feed artery

2C10-4 The effects of prolonged expiration on cardiac parasympathetic nervous activity during and after exercise.
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Purpose: The purpose of this study was to clarify the effects of prolonged expiration on cardiac parasympathetic nervous activity during and after exercise.

Methods: Seven healthy adult men (22.6±1.2 years) participated in this study. They exercised on the bicycle ergometer at 40% of peak oxygen uptake for 10 minutes and then rested on a chair for 20 minutes. Three conditions were performed, namely prolonged expiration (2-count inhalation and 4-count exhalation) at exercise phase (E-N condition) and at both exercise and recovery phases (E-E condition), and spontaneous respiration at both exercise and recovery phases (N-N condition). We measured oxygen uptake (\( \dot{V}O_2 \)), heart rate (HR), parasympathetic nervous activity (lnHF), and subjective symptoms (respiratory discomfort and leg fatigue).

Results: At exercise phase, \( \dot{V}O_2 \) and HR were not significant among 3 conditions (P<0.05). During prolonged expiration, lnHF was increased at both exercise and recovery phases (P<0.05). Leg fatigue was not significant among 3 conditions, but respiratory discomfort was significantly increased by prolonged expiration (P<0.05).

Conclusion: We concluded that prolonged expiration stimulated parasympathetic nervous activity during and after low intensity exercise.

Key words: prolonged expiration, after exercise, parasympathetic nervous activity