




## The aging influence on cardiorespiratory, metabolic, and energy expenditure adaptations in head-out aquatic exercises: Differences between young and elderly women

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### ABSTRACT

The purpose of this study was to: (1) establish the relationship between acute physiological responses and musical cadence; and (2) compare physiologic responses between young and older women. Eighteen older (mean = 65.06 ± 5.77 years) and 19 young (mean = 22.16 ± 2.63 years) women underwent an intermittent and progressive protocol performing the head-out aquatic exercise the “rocking horse.” Results showed that older women demonstrated lower mean heart rate, blood lactate concentration (bLa), and oxygen uptake (VO<sub>2</sub>) at rest. Hierarchical linear modeling showed that variations in the rating of perceived effort and individual metabolic equivalent of task did not differ significantly by age group. However, during exercise, physiological responses of younger women were significantly different than for older women: in mean values, for each increased musical beat per minute, mean bLa was 0.003 mmol/l, VO<sub>2</sub> was 0.024 ml/kg/min, and energy expenditure was 0.0001 kcal/kg/min higher for younger women. This study shows that increases in musical cadence increased the cardiorespiratory, metabolic, and energy expenditure responses. However, these responses during increasing intensity seemed to differ between young and older women, with lower values for the elderly group, when performing head-out aquatic exercises.

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### KEYWORDS

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