INVESTIGACIÓN - EDUCACIÓN FÍSICA

IMPACT OF AEROBIC TRAINING ON PHYSICAL PERFORMANCE IN AGED MICE SUBMITTED TO PRENATAL ALCOHOL EXPOSURE

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Prenatal alcohol exposure (PAE) is a major public health issue associated with neurobehavioral and cardiovascular impairments, yet its long-term impact remains less explored. Several authors suggest that exercise can result in improvement of physical performance caused by PAE. However, this evaluation was not performed in middle-aged animals, which simulate the age of increased cardiovascular diseases in humans. OBJECTIVE: This study investigated the effects of PAE on physical performance in aged C57BL/6 mice (18 months old) on physical performance and the potential rehabilitation through exercise. METHODS: Twenty male and twenty female mice were assigned to Control (CT)

or PAE groups and further subdivided into Trained (T; 8 weeks of treadmill running, 5 days/week) or Sedentary (S) conditions. Maximal graded treadmill tests were conducted at baseline, and post-intervention (8 weeks). RESULTS: At baseline, PAE mice displayed significantly lower maximal running speeds than CT mice ($p<0.0001$), with the largest deficits in PAE males. After 8 weeks, aerobic training significantly improved performance in PAE males ($p=0.046$) and CT females ($p=0.018$), eliminating the initial gap between PAE and CT males ($p=0.667$). Trained animals consistently outperformed sedentary counterparts at the end of the intervention ($p<0.0001$), while sedentary groups maintained or declined in performance, with sedentary PAE males showing the lowest final values. Significant Treatment x Training ($p=0.0005$) and Sex x Training ($p=0.0137$) interactions indicated that exercise effects varied by sex and prenatal exposure status. CONCLUSION: These findings demonstrate that aerobic exercise initiated in late adulthood can effectively reverse PAE-induced physical performance deficits in males and protect against age-related functional decline in both sexes. The combination of exercise and photobiomodulation will be applied to test best performances in the experimental groups.

Palavras-chave: prenatal alcohol exposure;aging;aerobic exercise; c57bl/6 mice.