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Thoracic sympathectomy and cardiopulmonary responses to exercise

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Abstract

The purpose was to study the effect of endoscopic thoracic sympathectomy (ETS) for palmar and/or axillary hyperhidrosis on physiological responses at rest, and during sub-maximal and maximal exercise in 10 healthy patients (7 females and 3 males 18-40 years old) with idiopathic palmar and/or axillary hyperhidrosis. T2-T3 thoracoscopic sympathectomy was performed using a simplified one stage bilateral procedure. Physiological variables were recorded at rest and during sub-maximal (steady-state) and maximal treadmill exercise before and 70 (±7.5, SD) days after bilateral ETS. Following bilateral ETS, exercise performance capacity and peak VO_2 were not different than prior to the ETS. However, heart rate was significantly reduced at rest (14%), at sub-maximal exercise (12.3%) and at peak exercise (5.7%), together with a significant increase in oxygen pulse (11.8%, 12.7% and 7.8%, respectively). The Rate Pressure Product (RPP) was also significantly reduced following the surgical procedure at all three study stages, while all other physiological variables measured, remained unchanged. It is suggested that sympathetic denervation of the upper limb does not affect exercise performance or mechanical/physiologic efficiency, despite a significant reduction in heart rate (at rest and during exercise) which most likely, was fully compensated by an increase in stroke volume and/or by improved muscle O_2 extraction and/or utilization, keeping the cardiac output and oxygen uptake unaffected.

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