Cerebral oxygenation, exercise capacity, cardiac output and cognitive performance in patients with coronary heart disease
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Methods.– Twenty stable fit CHD patients (70.8 ± 9.1 years), 10 healthy age-matched (70.5 ± 8.8 years), 10 middle aged controls and 10 young controls (40 ans) were included. We assessed cognitive performance with a standard battery of pen and paper tests, maximal exercise test on ergocycle with gas exchange analysis with non-invasive cardiac output measurement and Near-Infrared Spectroscopy (NIRS) oxygenation indices at the brain level.

Results.– There was no intergroup difference in VO2max or maximal cardiac output between cardiac and healthy age-matched individuals. Some cognitive tests, especially for executive functioning, were significantly better for the healthy matched group (Trail Making Test-B; Inhibition/Flexibility Stroop Test) compared to CHD patients. The decrease of the O2 pulse (cardiac limitation) was observed in 55% of patients with stable CHD.

Conclusion.– In spite of comparable maximal exercise tolerances and cardiac outputs, CHD individuals presented some reduced cognitive performances with stable CHD.

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Effects of a 4-month high-intensity interval training associated with resistance training program on cognitive performance, cerebral oxygenation, exercise capacity and cardiac output in middle-aged overweight subjects
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Methods.– Six adults (4 males) (49.4 ± 8.7 years; BMI: 29.4 ± 1.4 kg/m²) performed a 4-month training program including 2 high-intensity interval training (HIIT) sessions on ergocycle, and 2 resistance training sessions per week. The HIIT sessions were performed with a 4–5% slope and lasted 20 min at 85% of the age-predicted maximum heart rate. The resistance training sessions were performed 3 times per week for 30 min with 3 sets of 10 repetitions. We assessed cognitive performances with a standard battery of pen and paper tests, maximal exercise test on ergocycle with gas exchange analysis and NIRS oxygenation indices at the brain level.

Results.– Primary symptoms, which stop ergometer exercises, were muscular symptoms (63.6%). Patients had early onset of the first ventilatory threshold. Ventilatory limitation occurred with lung volume recruitment defects (61.4%) and increasing lack of O2 pulse (cardiac limitation) were observed in 54.5% of cases, without cardiac or pulmonary abnormality examinations at rest.

Conclusion.– Studying exercise adaptations in patients with neuromuscular diseases seems useful. On the other hand, to evidence a cardiac or pulmonary dysfunction, not adapted to rest.

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Cerebral oxygenation, exercise capacity, and cognitive performance in patients with slowly progressive neuromuscular diseases
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Methods.– Many interventional studies have reported the benefits of regular physical activity on cognitive aging, even more when different exercise modalities were combined. The purpose of our study was to assess the effects of a training intervention combining high-intensity interval training and resistance training on anthropometric data, exercise tolerance, cognitive performance and cerebral oxygenation during exercise in overweight adults.

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