

Abstract

The aim of this study was to compare NIRS (Near-infrared spectroscopy) and respiratory parameters measurement in determination of anaerobic threshold. Additionally changes in muscle oxygenation (SmO_2) were described during incremental bicycle exercise. Fifteen subjects, 9 men and 6 women took part in this study. To verify the reliability of the measurement, the experiment was performed in the form of a test/retest with a few day's delay. The value of SmO_2 was measured in *m. gastrocnemius lateralis* and *m. vastus lateralis*. In addition, respiratory parameters and pulse rate were recorded during the examination. The data obtained show that the breakpoint in the SmO_2 dynamics determined by the NIRS method means that the exercise intensity above the anaerobic threshold is reached, because the breakpoint is located in the area of the Respiratory Compensation Point. In the SmO_2 parameter, it is also possible to monitor the equilibrium state during the rest phase. The SmO_2 parameter after the ramp log terminates exceeds the value in the rest phase, and returns to the quiescent value usually within 2 minutes. The test/re-test method has verified the reliability of the measurement.