Abstract

Background: Aging leads to low functional capacity and this can be reversed by safe and adequate exercise prescription. Objective: The aim of this study was to identify the anaerobic threshold (AT) obtained from the V-slope method as well as visual inspection of oxyhemoglobin (O2Hb) and deoxyhemoglobin (HHb) curves and compare findings with the heteroscedastic (HS) method applied to carbon dioxide production (V CO2), heart rate (HR), and HHb data in healthy elderly men. A secondary aim was to assess the degree of agreement between methods for AT determination. Method: Fourteen healthy men (61.4±6.3 years) underwent cardiopulmonary exercise testing (CPX) on a cycle ergometer until physical exhaustion. Biological signals collected during CPX included: ventilatory and metabolic variables; spectroscopy quasi-infrared rays - NIRS; and HR through a cardio frequency meter. Results: We observed temporal equivalence and similar values of power (W), absolute oxygen consumption (V O2 - mL/min), relative V O2 (mL.Kg-1.min-1), and HR at AT by the detection methods performed. In addition, by the Bland-Altman plot, HR confirmed good agreement between the methods with biases between -1.3 and 3.5 beats per minute. Conclusions: (i) all detection methods were sensitive in identifying AT, including the HS applied to HR and (ii) the methods showed a good correlation in the identification of AT. Thus, these results support HR as valid and readily available parameter in determining AT in healthy elderly men.

Keywords

Physical therapy, anaerobic threshold, NIRS, cardiopulmonary test, heteroscedastic model.