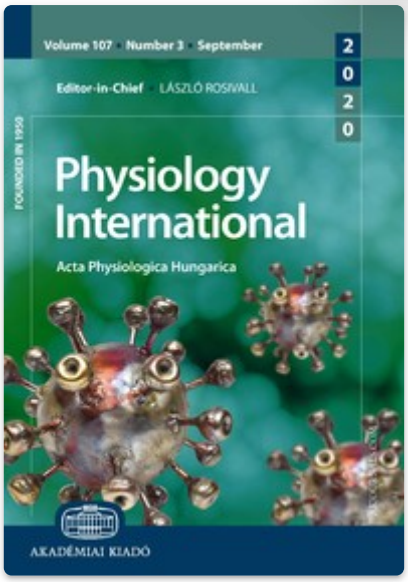

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Agreement between heart rate deflection point and maximal lactate steady state in young adults with different body masses

Authors: R. Afroundeh [1], P. Hofmann[2], S. Esmaeilzadeh[1,3], M. Narimani[1], and A.J. Pesola[3]

[1] Faculty of Educational Sciences and Psychology, University of Mohaghegh Ardabili, Ardabil, Islamic Republic of Iran
| [2] Exercise Physiology, Training & Training Therapy Research Group; Institute of Human Movement Science, Sport & Health; University of Graz, Austria
| [3] Active Life Lab, South-Eastern Finland University of Applied Sciences, Mikkeli, Finland

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Abstract

We examined the agreement between heart rate deflection point (HRDP) variables with maximal lactate steady state (MLSS) in a sample of young males categorized to different body mass statuses using body mass index (BMI) cut-off points. One hundred and eighteen young males (19.9 ± 4.4 years) underwent a standard running incremental protocol with individualized speed increment between 0.3 and 1.0 km/h for HRDP determination. HRDP was determined using the modified D_{max} method called $S.D_{max}$. MLSS was determined using 2-5 series of constant-speed treadmill runs. Heart rate (HR) and blood lactate concentration (La) were measured in all tests. MLSS was defined as the maximal running speed yielding a La increase of less than 1 mmol/L during the last 20 min. Good agreement was observed between HRDP and MLSS for HR for all participants (±1.96; 95% CI = −11.5 to +9.2 b/min, ICC = 0.88; $P < 0.001$). Good agreement was observed between HRDP and MLSS for speed for all participants (±1.96; 95% CI = −0.40 to +0.42 km/h, ICC = 0.98; $P < 0.001$). The same findings were observed when participants were categorized in different body mass groups. In conclusion, HRDP can be used as a simple, non-invasive and time-efficient method to objectively determine submaximal aerobic performance in nonathletic young adult men with varying body mass status, according to the chosen standards for HRDP determination.