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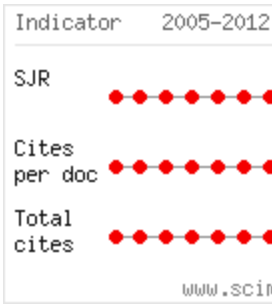


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# A new approach for the determination of anaerobic threshold: methodological survey on the modified Dmax method

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## Abstract

A wide variety of diagnostic techniques can be found in the literature for anaerobic threshold (AT) assessment. The aim of this study was to investigate if the heart rate (HR) at the modified $D_{max}$ method (Mod-$D_{max}$) using parallel straight line slope (PSLS) mathematical model and the Narita target heart rate equation was comparable with the HR measured at the AT by the continuous respiratory gas measurements in healthy young

girls. Eight (age 19.29 ± 1.70 years) healthy young girls performed an exhaustive treadmill exercise test for determination of the HR at Mod-$D_{max}$ using PSLS model and Narita equation. The AT of the participants was also calculated by the continuous respiratory gas measurements according to the Craig method. There was no significant difference between the HR determined at the Mod-$D_{max}$ method and the HR measured at the AT by the continuous respiratory gas measurements (167 ± 9.22 vs. 165.25 ± 6.32 b/min). Bland and Altman plots revealed a good agreement between the determined HR at Mod-$D_{max}$ and values of the HR measured at the AT by the continuous respiratory gas measurements (95% CI = −20 to +22.8 b/min). According to the results, the Mod-$D_{max}$ using PSLS model and the Narita equation during the exhaustive treadmill exercise test is an accurate and reliable noninvasive alternative to the cumbersome, expensive, and time-

consuming invasive methods. Therefore, the Mod-$D_{max}$ method can be used for the determination of AT in healthy young girls.

Key words: PSLS MATHEMATICAL MODEL; NARITA EQUATION; HEART RATE DEFLECTION POINT (HRDP)

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