Relationship between 800-m running performance and running economy during high-intensity running in well-trained middle-distance runners

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Abstrak

Running economy (RE) at an intensity above the lactate threshold (LT) is reported to be the most important aerobic capacity for estimating 1,500-m running performance. The reason that the RE at intensity better reflects the energy metabolism during a 1,500-m run, is that it is performed above the LT intensity running. This study clarified the relationship be¬tween an 800-m run, which is performed above the LT intensity, and aerobic capacities, includ¬ing the RE measured at intensities below and above the LT. This study included 12 well-trained j male middle-distance runners (800-m velocity: 25.5 ± 0.5 km-h"1, LT intensity: 79.7 ± 5.1% maximal oxygen uptake [VC>2max]). Both the RE of below and above the LT intensity were cal¬culated at 65%V02max (RE6s) and 90%VO2max (RE9o). The 800-m velocity was not related to the VC^max or the LT intensity (r = -0.16 and -0.10, respectively). This velocity correlated with both RE90 and RE65, with the correlation coefficient being higher for RE90 (r = -0.80 vs -0.75). Furthermore, the coefficient of determination for the 800-m velocity determined from V02max, LT intensity and RE90 was higher than that determined from V02max, LT intensity and RE65 (R2 = 0.522 vs 0.428, P = 0.03 vs 0.06). Based on these results, we concluded that the RE at an intensity above the LT might be better than other aerobic capacities for estimating the 800-m running performance, and more than 50% of this performance can be explained by VC max, LT intensity and RE at an intensity above the LT.