


Relationship Between Training Status and Maximal Fat Oxidation Rate

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ABSTRACT

This study aimed to compare maximal fat oxidation rate parameters between moderate- and low-performance runners. Eighteen runners performed an incremental treadmill test to estimate individual maximal fat oxidation rate (Fat_{max}) based on gases measures and a 10,000-m run on a track. The subjects were then divided into a low and moderate performance group using two different criteria: 10,000-m time and VO_{2max} values. When groups were divided using 10,000-m time, there was no significant difference in Fat_{max} (0.41 ± 0.16 and 0.27 ± 0.12 $g \cdot min^{-1}$, $p = 0.07$) or in the exercise intensity that elicited Fat_{max} (59.9 ± 16.5 and 68.7 ± 10.3 % O_{2max} , $p = 0.23$) between the moderate and low performance groups, respectively ($p > 0.05$). When groups were divided using VO_{2max} values, Fat_{max} was significantly lower in the low VO_{2max} group than in the high VO_{2max} group (0.29 ± 0.10 and 0.47 ± 0.17 $g \cdot min^{-1}$, respectively, $p < 0.05$) but the intensity that elicited Fat_{max} did not differ between groups (64.4 ± 14.9 and 61.6 ± 15.4 % VO_{2max}). Fat_{max} or % VO_{2max} that elicited Fat_{max} was not associated with 10,000 m time. The only variable associated with 10,000-m running performance was % VO_{2max} used during the run ($p < 0.01$). In conclusion, the criteria used for the division of groups according to training status might influence the identification of differences in Fat_{max} or in the intensity that elicits Fat_{max} .

Key words: fat oxidation, running performance, indirect calorimetry

Key Points

- The results of the present study suggest that the criteria used to categorize aerobic training status of subjects can influence the magnitude of differences in Fat.
- The Fat is similar between groups with similar 10,000-m running performance.
- The 10,000-m running performance seems to be associated with an increased ability to oxidize carbohydrate.

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