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1: [Int J Sports Med.](#) 2003 Nov;24(8):603-8.

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Maximal fat oxidation during exercise in trained men.

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Fat oxidation increases from low to moderate exercise intensities and decreases from moderate to high exercise intensities. Recently, a protocol has been developed to determine the exercise intensity, which elicits maximal fat oxidation rates (Fat(max)). The main aim of the present study was to establish the reliability of the estimation of Fat(max) using this protocol (n = 10). An additional aim was to determine Fat(max) in a large group of endurance-trained individuals (n = 55). For the assessment of reliability, subjects performed three graded exercise tests to exhaustion on a cycle ergometer. Tests were performed after an overnight fast and diet and exercise regime on the day before all tests were similar. Fifty-five male subjects performed the graded exercise test on one occasion. The typical error (root mean square error and CV) for Fat(max) and Fat(min) was 0.23 and 0.33 l O₂ x min⁻¹ and 9.6 and 9.4 % respectively. Maximal fat oxidation rates of 0.52 +/- 0.15 g x min⁻¹ were reached at 62.5 +/- 9.8 % VO₂(2)max, while Fat(min) was located at 86.1 +/- 6.8 % VO₂(2)max. When the subjects were divided in two groups according to their VO₂(2)max, the large spread in Fat(max) and maximal fat oxidation rates remained present. The CV of the estimation of Fat(max) and Fa(min) is 9.0 - 9.5 %. In the present study the average intensity of maximal fat oxidation was located at 63 % VO₂(2)max. Even within a homogeneous group of subjects, there was a relatively large inter-individual variation in Fat(max) and the rate of maximal fat oxidation.

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