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**Effects of a Deca Iron Triathlon on Body Composition - A Case Study.**

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We investigated energy balance and change of body composition in one athlete in a multistage triathlon, the World Challenge Deca Iron Triathlon 2006, where athletes had to perform one Ironman triathlon of 3.8 km swimming, 180 km cycling and 42.195 km running per day for ten consecutive days. In one well-experienced male ultra-endurance triathlete, we measured body mass, skinfold thicknesses and perimeters of extremities, in order to calculate skeletal muscle mass, fat mass and percentage of body fat. Energy intake was measured by analysis of nutrition, and energy expenditure was calculated using a portable heart rate monitor. This was performed to quantify energy deficit. In addition, bio-impedance measurements were performed to determine fluid metabolism. The athlete finished the race in 128 hours, 22 minutes and 42 seconds in 3rd position. Body mass decreased by 1 kilogram, skeletal muscle mass decreased by 0.9 kilograms and calculated fat mass decreased by 0.8 kilograms. Total body water increased by 2.8 liters. Total energy expenditure for the Deca Iron was 89 112 kilocalories and a total energy deficit of 11 480 kilocalories resulted. We presume that energy deficit was covered by consumption of adipose subcutaneous tissue as well as skeletal muscle mass; the degradation of muscle mass seems to lead to hypoproteinemic edemas.