ERYTHROPOIETIN TREATMENT REDUCES SKELETAL MUSCLE BLOOD FLOW DURING SUBMAXIMAL EXERCISE
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Erythropoietin (Epo) increases arterial oxygen content (CaO2) by decreasing plasma volume and increasing erythropoiesis (1). We tested the hypothesis that EPO treatment would result in a decrease in muscle blood flow during submaximal exercise due to elevated CaO2. Eight healthy subjects received 5000 IU recombinant human Epo (rHuEpo) for 15 weeks at a dose frequency aimed to increase and maintain haematocrit at approximately 50%. Red blood cell volume was increased from 2933 +/- 402 ml before rHuEpo treatment to 3172 +/- 561 ml (P < 0.01) after 13 weeks. Before and after EPO treatment, subjects exercised on a bicycle ergometer at 100 Watts (W) in normoxia and hypoxia (FiO2 = 11%). Local quadriceps muscle blood flow was measured by near infrared spectroscopy and bolus injection of the tracer indocyanine green dye (ICG) (2). Blood flow index was expressed as the slope of increase in muscle [ICG] according to the Sapirstein principle. After EPO treatment blood flow was significantly reduced at a submaximal exercise cycling load of 100 Watts (P<0.05). The results indicate that EPO treatment reduces circulatory demand during submaximal exercise, and confers a potential ergogenic effect in prolonged endurance exercise in normoxia and hypoxia.
1. Lundby et al. J. Physiol. 2006
Keywords: Blood Flow