**C-2-3 Effects of exercise under hypo-baric hypoxia on Nrf2 and antioxidant enzyme mRNA expression**

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**Purpose:** The oxidative stress associated with increased oxygen demand during high-altitude trekking may be increased by environmental factors such as hypoxia and ultraviolet radiation. The effects of exercise on oxidative stress under hypobaric hypoxia are not well understood. **Methods:** We measured the levels of mRNA encoding Nrf2 (a cellular oxidative stress sensor) and antioxidant enzyme (SOD1, GPX1, HO-1) in subjects during high-altitude trekking. Four males (22.0 ± 0.4 years) completed a 3-day trek up and down Mt Fuji, reaching a peak altitude of 3,776m. Blood samples were assayed for biomarkers of oxidative stress and antioxidant potential at the following points: 1) before the trek; 2) at the time of the summit; 3) on the morning of day 2 on the summit; 4) in the evening of day 2 on the summit; and 5) after the trek at the base elevation. Nrf2 mRNA levels were measured by using RT-PCR assay. **Results:** They were non-significantly lower (by 37.2%; p = 0.10) at 3) than at 1) and non-significantly lower (by about 30%) at 2) than 1). The levels of antioxidant enzyme mRNA did not change during the trek. **Discussion:** These findings indicate that high-altitude trekking is not associated with extraordinary levels of blood oxidative stress. Trekking on Mt Fuji appears hematologically safe. **Key words:** exercise, hypobaric hypoxia, Nrf2

**C-2-4 Effect of menstrual cycle on cortisol concentrations after resistance exercise**

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**Purpose:** The purpose of this study was to determine whether an acute resistance exercise performed during different phases of the menstrual cycle alters serum cortisol concentrations in young women. **Methods:** Eight young, healthy female subjects were studied throughout the menstrual cycle. Subjects performed an acute, high-intensity resistance exercise (leg press exercise: eight sets of eight repetitions maximum). Serum 17β-estradiol, progesterone and cortisol concentrations were measured on each study day. **Results:** Serum progesterone concentrations were significantly higher in the luteal phase than those in the follicular phase (P < 0.01), but no significant differences were observed in the serum cortisol concentrations after high-intensity resistance exercise during the different phases of the menstrual cycle. **Discussion:** No significant differences were observed for the serum cortisol concentrations during the different phases of the menstrual cycle. These results suggest that the different phases of the menstrual cycle do not affect the cortisol secretion response. **Key words:** menstrual cycle, high-intensity resistance exercise, cortisol concentrations