

Gokyo Khumbu/Ama Dablam Trek 2012

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In the expedition Gokyo Khumbu/Ama Dablam Trek 2012, we studied the effects of two 12-day training periods performed both at sea level and at high altitude. The main results on adult women have been published in six original articles. In women, high altitude trekking induced CD69 T cell activation and promoted anti-stress effects of the immune responses and the oxidative balance (1). Low-to-moderate exercise training at s.l. improves the regenerative capacity of skeletal muscle and depicted the epigenetic signature of satellite cells. The cell differentiation was favored by increased [Ca²⁺]_i and fusion index (2). On the contrary, the training in hypobaric-hypoxia induced oxidative stress and impaired the regenerative capacity of satellite cells (6). Although training did not significantly modify muscle phenotype, it induced beneficial adaptations of the oxygen transport-utilization systems witnessed by faster VO₂ kinetics at exercise onset (3). The two training periods did not influence the postural stability (4). In young adult women, micturition physiological parameters were affected during adaptation to hypoxia; the correlation with SpO₂ strongly suggests a role of hypoxia in these changes (5).
References

1 Morabito et al Scand J Med Sci Sports doi: 10.1111/sms.12557 2015

2 Pietrangelo T et al Front Physiol. 6:399 2015

3 Tam E et al Eur J Appl Physiol 116(1):129-44 2016

4 Scordella A et al SSH 2016

5 Verratti et al AJP-Renal 2016

6 Mancinelli R et al Front Physiol. 2016