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Exercising in hypoxia as an innovative treatment

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Innovative clinical strategies including high-intensity interval training (Wisløff et al. 2015) are urgently needed to tackle the unprecedented increasing prevalence of cardio-metabolic disease worldwide (Dietz et al. 2015). Among many personal and environmental factors, the beneficial effects of physical activity on weight loss through increased energy expenditure and appetite modulation are firmly established (Donnelly et al. 2009). Recent evidence (Kayser and Verges, 2013) shows that combining exercise with hypoxic exposure enhances the negative energy balance and thereby further reduces weight and improves cardio-metabolic health in the obese. Firstly, the ‘altitude anorexia’ indicates that even short exposures to hypoxia are associated with appetite reduction, resulting from decreased activity of appetite-regulating gut hormones such as plasma acetylated ghrelin (Bailey et al. 2015). Appetite and gut hormone responses to moderate-intensity continuous exercise versus high-intensity interval exercise, in normoxic and hypoxic conditions. Appetite 89, 237–245.


Additional information

Competing interests

None declared.

High intensity interval versus moderate intensity continuous training in obese individuals: a complementary view in real world setting

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It has been recently shown that in obese men eight cycling sessions (spread over 2 weeks) of a moderate intensity continuous training (MICT: 40–50 min at ~60–70% of the maximal heart rate (HR\textsubscript{max})) and a high intensity interval training (HIIT: 10 × 60 s intervals at ~90% HR\textsubscript{max} interspersed with 60 s recovery) matched for mechanical work were both effective for the improvement of aerobic fitness and fat oxidation rates during exercise (Lanzi et al. 2015). Although there was no significant difference in increased peak oxygen uptake (\(V\text{\textsubscript{O}_2}\text{peak}\)), HIIT had a tendency toward promoting a more marked increase in \(V\text{\textsubscript{O}_2}\text{peak}\) compared with MICT (+8% for HIIT and 4% for MICT). This improvement, likely to be related to exercise intensity (Helgerud et al. 2007), highlights that (1) HIIT may be a time-efficient training in obese individuals (Gillen et al. 2013) and (2) it is important to continuing to promote HIIT early after initiation of training programmes to rapidly reverse the low aerobic fitness in this population (Astorino et al. 2013). Although these two points seem to attest that HIIT may be preferable to MICT, only the latter induced a significant reduction in fasting insulin and insulin resistance (Lanzi et al. 2015), suggesting the importance of exercise duration for improving insulin sensitivity in obese individuals (Houmard et al. 2004). These results, associated with the