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Low intense physical exercise in normobaric hypoxia leads to more weight loss in obese people than low intense physical exercise in normobaric sham hypoxia.

Training in mild to moderate hypoxia (14-17% O₂) in breathing air) and extended resting in moderate hypoxia (9-13% O₂) have been shown to have effects in animals and humans on lipid and glucose metabolism, appetite loss, and, in part, on body weight. The causality for these effects is not yet known in detail, and the available data in humans from high-altitude and low-pressure chamber studies are scarce. New technical developments by German companies in the production of artificial climates with normobaric hypoxic conditions in larger rooms at reasonable energy costs allow now to perform hypoxia weight loss studies in obese humans with stable experimental conditions and protocols with a sham hypoxia control. Thirty-two obese people were recruited for a mild intense training study in normobaric hypoxia (15 vol.% O₂) and normoxia/sham hypoxia (20.1 vol.% O₂). Twenty of these [mean age 47.6 years, mean body mass index (BMI) 33.1, 16 m, 4 f] were willing to follow up on an 8-week, three times per week, 90-min low intense physical exercise in their individual fat burning mode, which has been determined by an exercise testing with spiro-ergometry upfront. The subjects were evenly randomized into a hypoxia and sham hypoxia group. The difference of the two groups in weight loss and changes in HbA_{1c} values were analyzed before and after the training period. No nutritional diet was applied. Subjects in the hypoxia group in mean lost significantly more weight than in the sham hypoxia group (Delta1.14 kg vs Delta0.03 kg; p = 0.026). This resulted in a tendency to reduce the BMI more in the hypoxia group (p = 0.326). In the mean, there was no HbA_{1c} exceeding normal values (mean 5.67 and 5.47%), and the HbA_{1c} stayed basically unchanged after the 8-week training.

Mild physical exercise three times per week for 90 min in normobaric hypoxia for 8 weeks led to significantly greater weight loss in obese persons than the exercise in sham hypoxia in this, to our knowledge, first sham hypoxia controlled study.