

### 1-A-09 Time course of blood pressure and arterial stiffness to intermittent hypobaric hypoxic exercise training

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**Purpose:** The present study aimed to examine the time course of blood pressure and arterial stiffness to intermittent hypobaric hypoxic exercise training.

**Methods:** Twelve healthy male adults (22±1 yrs) were assigned to normobaric normoxic exercise group (N, n=6) and hypobaric hypoxic exercise group (H, n=6). The subjects had aquatic exercise training in swimming pool located in a chamber where atmospheric pressure could be regulated. The exercise was performed at the intensity of around 50% $\dot{V}O_{2\max}$  for 30 minutes/training session, 4 days/week, for 4 weeks. H had the exercise in a hypobaric hypoxia corresponded to 2000m above sea level, and was exposed to the condition for 2 hours/session. Before and after the training, systolic (SBP), diastolic (DBP) and mean blood pressure (MBP) were determined at rest and during cycling exercise at 50% $\dot{V}O_{2\max}$ . Also, arterial stiffness was assessed by cardio ankle vascular index (CAVI). **Results:** No significant changes were observed in most valuables in N through the training period. Blood pressure at rest did not change significantly in H, either. However, SBP and MBP during moderate exercise decreased significantly within one week ( $P<0.05$ ), and furthermore, a significant decrease in CAVI was also found within 2 weeks ( $P<0.05$ ). **Discussion:** Our findings suggest that intermittent hypobaric hypoxic exercise could bring beneficial vascular adaptations within 1-2 weeks, such as a significant reduction of blood pressure associated with a decrease in arterial stiffness.

**Keywords:** intermittent hypobaric hypoxic exercise, blood pressure, cardio ankle vascular index, arterial stiffness

### 1-A-10 Effect of the differences in exercise intensity of resistance training on carotid arterial compliance

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**Purpose:** High-intensity resistance training generally reduces central arterial compliance in young subjects. However, the effect of low-intensity resistance training with blood flow restriction (BFR) on carotid arterial compliance has not yet been explored. We investigated the effect of differences in exercise intensity of resistance training on carotid arterial compliance.

**Methods:** Nineteen healthy young men, aged 22-32 years, were randomly divided into either low-intensity resistance training with BFR group (LT-BFR; 30%1RM, 4 sets, 75 reps [30-15-15-15]) or high-intensity resistance training group (HT; 75%1RM, 3 sets, 30 reps [10-10-10]). They performed free weight bench press exercise, 3 days per week, for 6 weeks. The LT-BFR group wore pressure cuff belts on both arms during training (external compression: 160mmHg).

**Results & Discussion:** MRI-measured pectoralis major muscle cross-sectional area and 1RM bench press strength significantly increased in both training groups after the training ( $p<0.05$ ). Carotid arterial compliance was reduced ( $p<0.05$ ) in only the HT group. Systolic blood pressure in thigh during exercise significantly were higher for HT group than LT-BFR group ( $p<0.05$ ). The present study suggested that low-intensity resistance training with blood flow restriction does not influence carotid arterial compliance.

Keyword: occlusion, stiffness, blood pressure