1P-Y-14 Effects of the cross sectional area on passive leg raising after bicycle exercise

Akira YOSHIOKA[1], Kazuki NISHIMURA[2], Sho ONODERA[2]

[1]Graduate school, Kawasaki university of medical welfare, [2]Kawasaki university of medical welfare

Purpose: We demonstrated that the cross sectional area of inferior vena cava during passive leg raising after high intensity bicycle exercise was less than that of rest with passive leg raising. We implied that inferior vena cava after high intensity exercise was controlled by the some modulation system, in order to maintain the blood flow to atrium. We hypothesized that the modulation system of inferior vena cava during passive leg raising after exercise depend on exercise intensity. The purpose in this study was to clarify the effects of cross sectional area of inferior vena cava on passive leg raising after ergometric exercise at high and low intensity. **Methods:** Seven healthy young males volunteered to participate in this study. All subjects signed the informed consent forms prior to participation in this study. Each subjects performed ergometric exercise after maintain the supine position with passive leg raising. Moreover, each subjects maintained the supine position with passive leg raising for 15 minutes after exercise. The exercise intensities were 80% of peak oxygen uptake (high intensity condition) and 40% of peak oxygen uptake (low intensity condition). The exercise duration of high intensity condition was 15 minutes, and that of in low intensity condition was 10 minutes. We measured the cross sectional area of inferior vena cava using ultrasound, at rest and every five minutes during recovery period after exercise. Furthermore, we measured heart rate throughout experiment. **Results and Discussion:** The cross sectional area of inferior vena cava in low intensity condition was no difference between at rest and after exercise. But, cross sectional area of inferior vena cava after exercise in high intensity condition was significantly less than at rest. We suggested that the modulation system of vena cava depended on the exercise intensity, and contribute to the modulation of blood flow.

Key Words: venoconstriction, cross sectional area of inferior vena cava, recovery period after exercise, exercise intensity

1P-Y-15 Favorable Effects of Regular Rowing Exercise on Elastic Property of Central Artery in Young Men

Hiroshi Kawano[1)], Kiyoshi Sanada[1)], Michiya Tanimoto[2)], Kenta Yamamoto[1)], Motoyuki Iemitsu[3)], Motohiko Miyachi[2)] and Mitsuru Higuchi[1)]

1) Waseda University, 2) National Institute of Health and Nutrition, 3) International Pacific University

Purpose: Arterial compliance is reduced with resistance training, but increased with aerobic training. Rowing exercise is proposed as exercise modality of combined resistance and aerobic training. The present study investigated whether central artery stiffness or compliance is favorably affected by regular rowing exercise in young men. **Methods and Results:** Twenty-six rowers (age, 20.2 years; height, 176 cm; weight, 69 kg; %fat, 11.7 %) and 34 age-matched control men (age, 20.5 years; height, 174 cm; weight, 64 kg; %fat, 14.5 %) were studied. Systolic blood pressure (BP) of rowers was significantly higher compared with controls (116 vs 111 mmHg, $P<0.05$), but there were no differences of mean and diastolic BP between 2 groups. In the rowers, central arterial compliance was higher (0.19 vs 0.15 $mm^2/mmHg$), and beta-stiffness was lower (2.03 vs 2.14 AU) compared with the controls (both $P<0.05$). **Conclusion:** This study found that regular rowing exercise favorably affects central arterial compliance and stiffness in young men. Thus, regular rowing exercise may reduce cardiovascular disease risks in young men.

Key word: rowing, arterial stiffness, combined training