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Time course of blood pressure changes immediately after maximal exercise

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Background. The aim of this study was to investigate the effect of exhaustive exercise on the time course of arterial blood pressure (BP) and heart rate (HR) during upright resting (inactive) and loadless pedaling (active) recovery from a bicycle exercise to exhaustion. **Methods.** The subjects were eleven healthy normotensive males. Systolic, diastolic and mean BP, and HR were recorded every 20 sec for the initial 6 min of the recovery period. **Results.** The time course of all BP measures during inactive and active recovery was characterized by a marked and sudden drop during the initial 20-sec period, followed by a quick rise. This was followed by a gradual decline till the end of the recovery period. The time course of HR recovery, on the other hand, exhibited a smooth decline without the initial drop. With active recovery, the initial drop of diastolic and mean BP was less than the inactive recovery. After the 20 sec period, the diastolic BP and HR were kept slightly higher with the active recovery than the inactive recovery. **Conclusions.** A sudden drop of the BP occurred at the initial recovery period of post cycle exercise to exhaustion though HR did not show such a change. The initial BP drop could be attenuated by the actively pedaling the cycle without load.

Key Words: Blood pressure, heart rate, exhaustive exercise, inactive recovery, active recovery

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Selective stimulation on vasoconstriction of vascular smooth muscle in cold pressure test

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Purpose: The artery blood pressure at rest is regulated constantly mediated through baroreceptor reflex. Cold stimulation is a useful method to increase in blood pressure. The purpose of this study was to investigate the effects of cold temperature and immersion volume on contraction of peripheral artery

Methods: Six healthy male students repeated the following cold pressure test. In the sitting position for rest, subject immersed his right fingers at water temperature 19 °C for 1 minute under measuring the blood pressure of left brachial artery. Fingers, a hand and a forearm were selected as immersing part, and 19, 13, 10 and 6 °C were selected as water temperature. Each cold pressure test of 12 trials was started after 5 minutes of interval.

Results and Discussion: In the pre experiment in a middle aged subject, the blood pressure showed 173/113 mmHg by immersion of fingers at water temperature 6 °C for 1 minute. The values of blood pressure (maximal, minimum and mean) increased gradually according to become lower temperature, as depended of increasing value in calculated peripheral resistance ($\text{stroke volume} = \text{mean blood pressure} / \text{heart rate}$). This phenomenon was not remarkable in young subjects. In fingers immersion at water temperature 6 °C, the pressor reflex was not produced by decline of peripheral resistance that was caused by increase of heart rate. The most effective stimulation in cold pressure test was observed at water temperature 6 °C except finger immersion. The pressure reflex was produced by the increase of peripheral resistance. However, this pressor reflex was inhibited when the heart rate increased.

Key words: cold pressure test, peripheral resistance, baroreceptor reflex