**P-3** Intensive exercise-induced acute muscle pain induced by constant cadence pedaling

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**Purpose:** The aim of the present study was to investigate whether intensive exercise-induced acute muscle pain (IEAP) could be induced by pedaling with a constant cadence.

**Methods:** The subjects were asked to perform 3 sets (rest, 2 min) of leg pedaling with different cadences (full effort, 120 rpm, 100 rpm, and 80 rpm) and different durations. The work rate was set to be equivalent to that obtained during the maximum pedaling. Pedaling load was varied between ~3–6 kpm depending on the maximum anaerobic power of each subject. The subjects subjectively evaluated the degree of IEAP by using the Visual Analogue Scale (VAS, 100 mm) and McGill Pain Questionnaire (MPQ).

**Results and Discussion:** The degree of IEAP following the pedaling tasks increased with the cadences, i.e., the higher the cadence, the greater the IEAP. Time course changes in IEAP were qualitatively similar for both pedaling at maximum and at 120 rpm. However, there was a significant difference of the peak IEAP following pedaling at 80 and 120 rpm. These findings suggest that IEAP can be induced by constant pedaling and that there is threshold cadence for inducing IEAP.

**Key Words:** Constant cadence pedaling exercise,

**P-4** Convergence of effects from arm and leg pedaling on cutaneous reflex in the arm muscles

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**Purpose:** It has been recently reported that amplitude of the early latency cutaneous reflex (ELCR, 30-70 ms) in the isometrically contracting arm muscles was almost equally increased during contralateral arm and bilateral leg pedaling. We tried to disclose an issue whether each effect giving rise to facilitation of the ELCR in the arm muscles was integrated by a common neural element in the central nervous system.

**Methods:** Subjects were asked to perform these three pedaling tasks; combined left arm and bilateral leg pedaling (AL), isolated left arm pedaling (ARM), and bi-lateral leg pedaling (LEG). ELCRs were recorded from the right flexor carpi radialis muscle and posterior deltoid muscle by stimulating the right superficial radial nerve.

**Results:** The amplitude of ELCR was significantly larger during the AL than during the ARM or LEG. The facilitatory effect during the AL was significantly larger than simple summation of effects during the ARM and LEG pedaling tasks.

**Discussion:** These findings suggest an existence of common neural element that integrates reflex effects on the ELCR in the arm muscles arising from the may be active during AL pedaling.

**Key words:** (Locomotion, Cutaneous reflex, Central pattern generator)