II-1 Effect of Local Cooling under Thermal Neutrality

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The effect of local cooling stimulation in the various parts of the human body was examined. The experimental clothing was a coverall type garment, which could be removed partially at each region of neck, breast, back, upperarm, forearm, thigh and leg. By removing each part of the clothing, each subject was locally exposed to the environment that was conditioned at globe temperature of 18.2℃, 50%RH and still air.

1) Local skin temperatures after exposure at neck was significantly lower than other parts. Local cooling stimulation of the neck affected not only on the extrimities but also on the trunk.
2) During cooling exposure, the rate of increase in heat flux at the trunk was larger than at the extrimities.
3) There were no significant changes in the general thermal sensation in seven exposured regions. The rate of decrease in the local thermal sensation at upper arm was larger than at thigh, lower leg and neck.

II-2 EFFECTS OF SHORT OUTDOOR EXPOSURE ON MAN'S THERMAL SENSATION WHEN RETURNED BACK TO THE ROOM

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The present study discusses of outdoor exposure effects on man's physiological responses and thermal comfort during winter. They showed uncomfortably cool sensation after 1 hr staying at sedentary with 0.6 clo in the chamber at 22C. But they evaluated the room condition comfortably warm for 10 min after returning back from outdoor walking, which dissipated for next 10 min. The physiological responses gradually recovered towards each level before going out for 30 min. The anticipation should be considered for estimation thermal condition of offices where activities are not the same.

II-3 Characteristics of Physiological Responses in a Non-steady State Thermal Environment in the Elderly

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To examine the age-related alteration of thermal responses, eighteen healthy males (9 elderly and 9 younger men) served as the subjects in this study. They rested in a climatic chamber for 180 min. Ambient temperature(Ta) was kept at 28°C for 30 min, then Ta was increased to 43°C and decreased to 13°C stepwisely at the rate of 0.5°C/min, and finally recovered to 28°C and kept for 30 min. Rectal temperature(Tre), skin temperature at 10 sites, local sweat rate(Lsw), and skin blood flow(SBF) were measured. As the results, we observed following specificity for the elderly group compared with the younger group: 1) sluggish responses in peripheral skin temperature following the change in Ta, 2) lower variation of Lsw and SBF on the forearm to change in Ta, 3) greater decrease in Tre at the end of the exposure. Therefore, it was suggested that elderly men's core temperature were affected easily by a change of ambient temperature, because of their reduction of thermal responses especially on the extremity and periphery.

II-4 EFFECTS OF COMBINED STIMULI OF ODORS AND AIR TEMPERATURES ON PHYSIOLOGICAL CHARACTERISTIC OF HUMAN

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The objective of this study is to investigate the effects of combined stimuli of odors and air temperatures on physiological characteristic of human. Seven healthy males, aged from 22 to 24 years old, served as subjects. The initial condition is 25℃ and no odor. Compound conditions consisted of two odors (eucalyptus and Rosemary), three temperature changes. (15, 25, and 35℃). In the immediately after temperature changes, there were interaction odor and temperature. Compare 15℃ change with no change, Rosemary was not decrease HR in the 15℃ change.

II-5 Oxygen Utilization Kinetics in Muscle of the Leg with the Passage of Work

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In the present-day industrial world, adoption of standing work system that regard expansion of working territory as important has been conspicuous. However, complaints for waist, legs or feet have been a problem because of persistent strain in muscles by posture restraint.

This study takes a close-up of partial burden of legs and assess as oxygen metabolizing condition of muscular systems. Moreover, it also aims at consideration to physiological effects by changes of transferring inserts and suitable seat-angle condition. It is presupposing use of chair for standing work that is expected to reduce burdens of body for standing work.

In the experiments, workers in a standing posture go and back at 3m between work stations on conditions that they works 25, 55 and 115 seconds at one station by use of the chair for standing work(seat-angle are 7, 15 and 30 degrees). As a result, on 25 and 55 seconds conditions, the concentration of oxy-hemoglobin have increased calmly in muscular systems.

II-6 Evaluation of Endurance Time and Muscle Fatigue During Sustained Holding Tasks

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This study aims to evaluate muscle fatigue and endurance time using surface EMG and acoustic myogram (AMG) of biceps brachii in sustained holding tasks as a function of joint angles. The subjects were ten healthy males. The experimental condition consisted of 3 elbow angles and 3 levels of MVC. As the results, there was no significant difference in the mean MVC values. The effect of elbow angles on endurance time was also not significant. There was low effect of elbow angles on decreasing rate of mean power frequency (MPF) of EMG at different load levels. By contrast, there was high affect of elbow angles on increasing rate of root mean squared (RMS) of EMG except at 20%MVC test. There was no significant effect of time on MPF of AMG, but the effect of elbow angle was significant except at 20%MVC test. The changes of RMS of AMG at 20%, 40% and 60%MVC tests was found to be increase, almost unchanged, and slightly decreased, respectively.