

**3B08** Comfort on Wearing Clothing of Old Females with Environmental Temperature 15°C, 20°CYayoi FURUMATSU <sup>1)</sup>, Yoshiko NAKAZATO <sup>2)</sup><sup>1)</sup> Jumonji Gakuen Women's Junior College,<sup>2)</sup> University of Tokyo Kasei

We studied old females' clothing micro climate, skin temperature and comfort in a climatic chamber with environmental temperature 15°C and 20°C.

Subjects were four old females. The experiments of 8 times were given on paired young and old, 4 times only the old. They wore same clothing and walked three times during 120 minutes. Skin temperature of the old with environmental temperature 15°C was lower than with 20°C. Lower leg skin temperature of the old wearing long pants with 15°C and 20°C, were similar but in the case of the old wearing middle long skirt with 20°C, their temperature were higher than with 15°C.

**3S02** Thermal Homeostasis and Thermal Hysteresis in response to Thermal Heat Exposure

Yasushi ASAKI

Department of Central Nervous System, Tokyo Metropolitan Institute of Gerontology

An investigation into the relationship between the ability of thermal homeostasis and thermal comfort in human being is one of interesting themes. I introduce that a method was applied to analyze thermal homeostasis in rats. To examine thermal homeostasis, rectal temperature in a freely moving rat was measured in a wide range of slowly and continuously changing ambient temperature. The cyclic period of change in ambient temperature is six hours. The relationship between rectal and ambient temperatures shows thermal hysteresis phenomenon at thermal heat imbalance. The some interesting results were obtained by this method that was applied at some differences in aging, a nycthemeral cycle, cold acclimatization and so on. For instance, the range of ambient temperature at which the aged animal can maintain thermal homeostasis, becomes narrower. The rectal temperature in the aged rat in response to a cold temperature represents thermal hysteresis.

**3S04** Evaluation of Thermal Comfort with Thermal Manikin and Numerical Simulation

Shin-ichi TANABE

Department of Human Environmental Engineering, Ochanomizu University

Nearly all of the commonly used comfort predictors assume that the occupant is in a homogeneous environment, and are not fully effective in situations where this is not the case. The purpose of this study is to describe a method for measuring non-uniform thermal environments using a new thermal manikin with controlled skin surface temperature. The manikin and its control logic are described, and an equivalent temperature based on the thermal manikin (*teq*) is proposed and discussed. To calibrate these methods, fundamental data were collected. Moreover based on thermal manikin data, numerical modeling of human thermal regulation was described here.

**3S05** Microneurographic Findings in Relation to Central Nervous System Function

Yoshiki SUGIYAMA, Toshiyoshi MATSUKAWA, Hiroki ITO, Tadaaki MANO

Department of Autonomic and Behavioral Neurosciences, Division of Higher Nervous Control, Institute of Environmental Medicine, Nagoya University

To clarify the relationship between sympathetic nerve activity and central nervous system function such as mental stress or cognitive process, 1) muscle sympathetic nerve activity (MSNA) were recorded microneurographically during delayed auditory feedback test (DAF) with simultaneous recordings of blood pressure. 2) Skin sympathetic nerve activity (SSNA) were recorded along with event-related potentials during auditory oddball paradigm. MSNA was higher during DAF, resulting in higher blood pressure than without delay. SSNA responded more frequently to target tones than to non-target tones. P300, especially P3a component was larger in target tones with sympathetic response than without sympathetic response. These results suggest sympathetic nerve activity may have a close relation with higher brain function involving frontal cortex.

**4B11** The Effects of Two Types of Clothing on Human Acclimatization

—Circadian Rhythm of Rectal Temperature and Salivary Immunoglobulin A

Xiuxian Li and Hiromi Tokura

Department of Environmental Health, Nara Women's University, Nara 630, Japan

The work studied the acclimatization effect on circadian rhythm of rectal temperature and salivary immunoglobulin A under the influences of two types of clothing. It was found that the subjects having worn knee-length skirts for 3 months from spring to summer showed lower rectal temperatures during the night time, and that salivary immunoglobulin A became higher level after having worn knee-length skirts for 2 months from summer to winter.

**4B12** Effects of Skin Pressure Applied by Clothing on Autonomic Nervous Function

---With Usage of Power Spectral Analysis---

Kaori OHKURA, Youko EJIMA, Sawako TANAKA, Hiromi TOKURA, Tomoko MIDORIKAWA <sup>1)</sup>, Yoshiyuki UEDA Takako FUJII, Tomoko NAGATA <sup>2)</sup><sup>1)</sup>Nara Women's University, <sup>2)</sup> Wacoal Corp.

The experiments were performed to study the effects of skin pressure applied by a girdle on the saliva volume and RR interval with seven female young adults. The subjects wore one-piece dress loosely for first 90 min, then added the girdle fitted to the body for 60 min and took off their girdles for last 40 min.

The major findings are summarized as follows;

- 1) Resting saliva secretion decreased significantly by wearing the girdle.
- 2) RR interval tended to increase by wearing the girdle.
- 3) High frequency component (HF) of heart rate variability increased significantly and the ratio of low frequency component (LF) to HF plus LF decreased significantly by wearing the girdle.

These results were discussed in terms of human physiology.