B-16 Skin Temperature,Clothing Microclimate and Comfort of Young and Old Female With Environmental Temperature 20℃ and 28℃

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We studied comparison between young and old female skin temperature, clothing microclimate and comfort in a climatic chamber with temperature 20℃ or 28℃.Subjects were four old female between the ages of 62 and 64 and four young. The experiments of 16 times were given on paired young and old. Sublingual temperature,skin temperature, blood flow, clothing micloclimate and comfort were measured. They wore same blouse and long skirt or long pants. Materials were 70% cotton and 30% acrylic fiber. Thigh,shank, dorsal foot and first toe skin temperature and first toe blood flow of the old wearing long pants were higher than those of the young through 120 minutes in the climatic chamber(temperature 20℃). Especially all shank skin temperature of the old wearing long skirts and pants were higher than those of the young with temperature 20℃ and 28℃. But clothing microclimate of the old showed lower temperature than those of the young. Correlation between first toe blood and skin temperature of both of young and old were high.

The old wearing pants felt it colder than the young with temperature 20℃ after 90 minutes passed.

B-17 Clothing Micloclimate and Comfort of Young and Old Female Wearing Clothes in Late Autumn, Spring and Summer

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We studied the relevant clothing for comfortable living. Subjects were 73 old female (62-86 years) and 64 young female(19-24 years).

Textile materials, weight, number and kinds of clothing were investigated. Sublingual temperature, skin temperature, clothing micloclimate and comfort wearing clothes were measured. Compared to the young, the old wore more multiple layers of clothing, particularly larger number of lower garments through the three seasons. Shank skin temperature of the old was higher than those of the young in late autumn and spring. Clothing micloclimate of the old showed lower temperature and larger humidity than those of the young in spring. Neutral evaluations of all three items (comfort, thermal and moist sensation) were 40% (late autumn),42.6% (spring), 22.2% (summer) of the old. Neutral evaluations of all three items (comfort, thermal and moist sensation) were 25%(late autumn),22.5% (spring),7.1%(summer) of the young.

The old felt it more comfortable than the young in summer.

B-18 The effects of mental fatigue and stress on human body -The comparison of human interface by the physiological approach-

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Most studies on human interface were based on the psychological methods, for instance, the counting up errors or the obtaining self-reports, concerning the degree of comfort or the like.

The purpose of the present study is to examine that difference of 12 VDT tasks by the physiological approach together with errors and self-reports.

Six male and six female university students (19-23 yrs) volunteered as subjects in this study. We measured heart rate, systolic and diastolic blood pressure, blood flow, skin potential level, the number of errors, time score and self-reports, concerning the degree of irritation, difficulty of input and comfort of operation.

Subjects input the same numeral as 120 of numbers displayed in left side of monitor with clicking of the mouse on the ten-key displayed in right side of the monitor. And these tasks are auto-finished after 200 seconds independent of the rate of completing all inputs. 12 tasks are consisted of the response time of system (fast or slow), the situation of input (displayed or not), button flash (flash or not) and the rest of time (displayed or not).

The average of heart rate and blood pressure became lower at the same the mean value of hand blood flow was higher time when subjects felt stronger irritation, difficulty of input and discomfort of operation and made more errors.

B-19 Influence of contrasting VDT mental work loads on physiological and psychological stresses.

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Two contrasting VDT mental works were simulated in the laboratory : a machine-paced, repetitive calculation task (Hard work), and a self-paced, creative drawing task (Light work) with the simulation software of personal computer. Six female students (21-22 years) participated individually in each work condition on different days. Measurements of electrocardiogram, tympanic and skin temperatures, flicker fusion frequency, scores of subjective symptom of fatigue and scores of thermosensation were obtained in the climate chamber (25°C,RH50%) during a 60 min period of work and during preceding and subsequent 15 min periods of rest. Scores of subjective symptom of fatigue were significantly higher in Hard work than in Light work during work. Decrements of flicker fusion frequency and activities of sympathetic nerve system which were estimated from the spectral values of heart rate variability were higher in Hard work than in Light work during the latter half of work. However, the levels of flicker fusion frequency and activity of sympathetic nerve system were in proportion to the scores of subjective symptom of fatigue in Hard work. It is possible that fatigue sensations raise the level of physiological functions in such a non self-paced work. Some students felt that air temperatures were changing during work, although these were constant, and although their tympanic and skin temperatures were little changing. Their thermosensations tended to shift to warmer level in Hard work and to cooler level in Light work. Thermosensations may be affected by the quality and quantity of mental work load.

B-20 Study on Visual Acuity Curves of Inverse Contrast Targets

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This study aims to obtaining the relationship among the contrast, background luminance and size of visual objects, using inverse contrast Landoit Rings' visual targets on mat coated paper.

The log-mean values of result shown with standard visual acuity curves in figure, under 5 minutes dark-adaptation.

B-21 Effects of Sound Stimulation on Physiological and Psychological Responses

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To investigate the effect of sound stimulation (pure tone) on physiological and psychological responses, skin blood flow (skbf) and subjective evaluation were measured. The subjects were five young males. They heard the pure tone (sound pressure of 50, 60, 70, 80 and 90 dB at each frequency of 500, 1000, 1500, 2000 and 2500 Hz) through the head phone in 30 seconds. The effect of sound pressure on SKBF was significant, but that of the frequency on it was not significant (ANOVA). Although, SKBF deceased with an increase in sound pressure, the degree of SKBF within 67.2 dB was larger. The recovery time from the maximal decrease to a resting level within 68.2 dB also was higher. The subjective discomfort increased at the sound pressure above 70 dB.

B-23 Study on the Skin Blood Flow in Postural Changes -Comparison Young Women with Old Women-

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The intention of this study is to measure skin blood flow at different measure points, indirectly with LDF (Laser Doppler Blood Flowmeter), and study it in terms of postural changes. It was carried out on nine young women and six old women in good health, on condition that temperature was 28℃ and humidity was 65%, the postural changes were as follows; < Spinal position > → < Fowler's position > → < Position with the crus rising > → < Prone position >. I compared the results of this experiment made on young women with those on old women. With both the young and the old the amount of skin blood flow differed obviously according to those postural changes. So did the skin blood flow among measure points. Besides, each physical characteristic of the young and the old proved to be clear.

B-24 Study on physiological load on *yukata* posture

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The aim of this study is to analyze the load on *yukata* posture ; Japanese traditional sitting posture on the floor, and to examine a comfortable style of *yukata* posture. As a first step of this study, *choza* ; one of *yukata* postures with the legs extended, was selected and was evaluated by comparing with reference to normal sitting posture on the chair. EMG records ; short periods (in a min) of static posture and long periods (in 30 min) of working posture, subjective symptom of physiological load and angles of joints were measured on three male and four female student volunteers. The results of EMG showed that *choza* posture tended to give higher levels of static activity in several muscles in neck, trunk and thigh than in the sitting posture on the chair. At least in 30 min, no remarkable change was found in EMG and subjective symptom. Some students estimated the back rest more effective in reducing the load on upper body in *choza* posture than in the posture sitting on the chair. Based on these results, the following attempt to reduce the load on *choza* posture was evaluated by EMG and subjective symptom and pressures on the seats on seven female subjects ; *zaisu*, Japanese floor chair, was used for the purpose of reducing the load of upper part of the body with lumber support which was aimed to support the lumbar lordosis. However, the lumbar lordosis was supported and pelvic tilt was reduced, the hamstring muscles might be too elongated. Therefore the knees were bent in two ways to reduce the elongation of it. One is inclining the seat, and the other is using supporter under the knees. The back rest angle was also examined in consideration of hip angle. Five sutudents preferred the former, one sutudent the latter, and one sutudent neither. EMG records indicated lower levels at each preferable type.