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1-1 The Effect of Mist Bathing on the Scalp Blood

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Comparative experiments of full body bathing and showering of eight healthy male subjects in their twenties were carried out to study the effect of mist bathing on the blood circulation in the scalp. To measure blood circulation, a laser Doppler blood flow meter was used to measure the metopic skin temperature and metopic perspiration to evaluate the production of heat near the scalp. Mist bathing was done at 40°C for 10 minutes and full body bathing was done at 40°C for 10 minutes, and reflecting the results of the measurement survey, showering was done for 3 minutes, then resting for 3 minutes and showering for 3 minutes. The results of the experiment have shown that immediately after entering the bath, full body bathing caused a significant increase, but mist bathing cause a significant increase after five minutes had elapsed. The experiment revealed that mist bathing encourages blood circulation in the scalp.

1-2 The Effects of Meal on Physiological Responses during Mental Task

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It is well known that dozing and the strain affect the human judgment and action and are thought to interfere the work. Since the meal is indispensable to a human being, it is important that strain and dozing influence a decision during mental task. Therefore, this study aims to clarify the relationship between meal and mental task on physiological responses. In this experiment, electrocardiogram, pulse wave (PWTT), baroreflex sensitivity (BRS) were measured, and also

subjective evaluation (NASA-TLX) were conducted during two conditions with meal and without meal. Two ways ANOVA was employed to examine the statistical analyses between meal and mental task factors. Results showed that NASA-TLX was not found to be significant among degree of difficulty of mental task. However, BRS significantly increased after meal condition in comparison with no meal. Heart rate increased significantly over the meal in PWTT. This finding suggested that meal consumption influenced the subjects to relax during mental task. Therefore endocrine system is known to contribute the change of mental stress regarding BRS, furthermore, the relationship between meal and mental task should be taken into consideration.

1-3 The Effect of Pillowcase Impregnated with Cedrol on Sleep

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Our study aimed to investigate the effect of pillowcase impregnated with Cedrol on sleep. Cedrol is a faint odor component and has sedative effects such as enhanced the activity of parasympathetic nervous system, inhibition of the enhanced activity of sympathetic nervous system and lessening mental strain. Healthy female (n=12) who took 20 or more minutes to fall asleep or suffered from long sleep onset participated the study. Their sleep variables were recorded by sleep log and activity logger (Actigraph; Mini-Mitter) for consecutive fourteen days. We set randomized cross-over two conditions; participants slept using pillowcase 1) without Cedrol (7 days) and 2) with Cedrol (7 days). Well-controlled seven participants' data were analyzed. No one noticed the scent of Cedrol. Objective sleep variables estimated by activity showed significant difference between conditions, while

subjective variables showed no differences. When participants slept with Cedrol, sleep onset was shorter ($t(6)=2.92, p<.05$) and sleep efficiency was better ($t(6)=2.92, p<.05$). The results showed that pillowcase impregnated with Cedrol facilitated the process into sleep onset and improved nocturnal sleep.

1-4 Effects of Empathy on Stress Cognition in Communication

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The aim of this study was to clarify effects of received empathy in communicating for 9 stressed female students. After mental and physical tasks, the subject told a listener how she felt during the tasks. At this time two conditions were conducted that the subject received a reaction with empathy (empathy condition) or no reaction (control) from the listener. HRV and EEG were measured during experiments. Subjective stress cognition was estimated by visual analog scale. Results in empathy condition compared with control were significantly higher LF/HF and β on T3 and reduction of subjective stress cognition. Also correlations were found in empathy condition that cognition of sharing the same feelings and understanding reduced above physiological activities. These findings meant that comfort by establishing communication especially in empathy condition reduced physiological activities. Conversely, even in empathy condition, not establishing communication might be more uncomfortable than in control. In conclusion, cognition of empathy reflected cognitions of sharing the same feelings and understanding, which inhibited physiological activities and reduced stress cognition.

1-5 Relationship between Daily Light Exposure and Melatonin Secretion Rhythm in Summer

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The salivary melatonin rhythms and light exposure levels in the daily life were measured in healthy female students ($n=6$, mean age 20.9 ± 0.2 years) during a subsequent month from the summer solstice. On a day during experimental period, the subjects collected saliva samples by themselves at 10:00, 12:00, 16:00, 19:00, 22:00, 1:00, 4:00 and 7:00 h. Additionally, on seven consecutive days including saliva sampling day, the subjects were required to wear Actiwatch L (Mini Mitter Co, Inc) for measuring light exposure every 1 min, and to fill out the diary about bedtime and waking time, etc.

The hours of daylight exposure varied daily and among individuals. The peak levels of nocturnal melatonin were negatively correlated with the mean hours of ≥ 5000 and ≥ 10000 lux light exposure during the experimental days ($p<.05$). These results suggest that there were chronic effect

of bright daylight exposure, and threshold of light intensity on nocturnal melatonin secretions.

1-6 Air-Conditioner Algorithm for Pleasant Sleep and Long Life

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Sleep has important physical, mental and regenerative purpose in a lifetime, and a causal relationship between declining core body temperature (T_c) and sleep quality has been well documented. In this study, we investigated the effect of the "V-shape" room temperature (T_r) controlled air-conditioner system (T_r decreases 2°C from bedtime over 3 hours and fixes 1 hour and increases 1°C up to the time of rising) on T_c , sleep latency and sleep stage. Ten healthy male subjects participated in two experimental sleeping conditions (V-shape T_r condition and Fixed T_r condition). Initial T_r was set at 29.5°C in both conditions. The fall in T_c was greater in V-shape T_r condition than in Fixed T_r condition. The longer deep sleep was also observed in V-shape T_r condition. These results indicated that V-shape T_r control system improve sleep quality with lower T_c during sleep.

1-7 Fundamental Study for Physiological Effects of Staying at Urban Rivers—Using Salivary Amylase and Cortisol as Indicators—

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Many urban residents have urban rivers near their living area, so they can go urban rivers a short time later. Such urban rivers are said to have some effects on us and one of these effects is the stress-relieving effect. So, urban rivers can be used as the stress-relieving spaces in urban residents' daily life. So we tried quantitative analysis of physiological effects especially the stress-relieving effect of staying at urban rivers. Measurement indexes are salivary amylase and cortisol, because subjects almost never get stressed by taking a saliva sample and we can measure in the open air. And we settled the measurement schedule in consideration for salivary cortisol's circadian rhythm and rate of reaction. We also carried out the questionnaire survey. As a result, when subjects stayed at urban rivers, salivary indexes have significantly lower concentration or lower concentration than at urban spaces. And "comfortable" and "peaceful" that are indexes of the questionnaire also have significantly-high. This study suggests the possibility that staying at urban rivers have the stress-relieving effect on us.