

STUDY OF THE STYLE OF NIGHT CLOTHES WITH SPECIAL REFERENCE TO BODY MOVEMENTS AS AN INDICATOR OF COMFORT

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INTRODUCTION

Man spends about one third of his life in bed, so it is important for us to pay close attention to the surfaces of sleeping materials. When studying those materials, it is necessary to consider both the physical properties of the materials as well as psychological factors such as the comfort of the sleeper. Previously, the author reported that an indicator of comfort was gained by recording body movements during sleep. The three parameters of body movements, i.e., frequency of body movements per hour (FB), mean rest period time (MR), and maximum rest period time (**MAR**), are the best parameters to use as an indicator of comfort. This study was designed to investigate whether the style of night clothing affects sleep quality. Two different styles of night clothes such as pajamas and negligee were tested measuring body movements during sleep as an indicator of comfort.

MATERIALS and METHODS

Eight healthy female students, aged 19-20 years, volunteered as subjects. *All* the experiments were conducted in the luteal phase of the menstrual cycle. Two different styles of night clothing such as pajamas and negligee were tested. These clothes were made of the same fibers and fabrics, and were made by the same company. In Experiment 1, four students volunteered as subjects. The photographs were being taken in order to observe the sleeping figure. Each of subject retired to her bed at home before 0:00, and had her photograph taken every 10 min. from 0:00 to 6:00 during the experimental period. Pajamas were used on the first night, a negligee on the second night, and were alternated each night so that each subject was recorded for one week. A questionnaire about the subjective sleep depth was filled in after awakening at 6:00. Photographs on the fifth and sixth days were used for this analysis and the sleeping figure of each

period was confirmed. After analysis of the photographs, each subject had other experiments conducted. That is, each subject reformed her own sleeping figure on an experimental bed, and variations of a single point of hem line on the night clothes were measured. In Experiment 2, another four students volunteered as subjects. Body movements during sleep of each subject were recorded. The style of night clothing was used as the dependent variable and the three parameters were used as the independent variables. The experiment was conducted under the experimental design of a simple paired t-test. In order to test the difference between two categories (pajamas and negligee) in relation to the dependent variable, the results were analyzed by ANOVA.

RESULTS

1. Experiment 1

Various sleeping figures were observed in the photographs. Table 1 shows the comparison of hems' variations during sleep between the pajamas and negligee. Except for one subject, there were differences in the variations between the pajamas and negligee. The data for pajamas shows the variations are small. It is desired that the variations be small because the thermal conditions between human body and bed clothes do not change widely and constant conditions are maintained. The subjective evaluation on the two styles of night clothes suggests that pajamas are the most comfortable ($p < 0.05$).

Table 1. Comparison of hem's variations during sleep between pajamas and negligee
Data are mean \pm S.D. (N=37).

Subject	Pajama (cm)	Negligee (cm)	Significance
S1	0.14 ± 4.03	11.41 ± 6.34	$p < 0.001$
s 2	2.30 ± 5.11	39.89 ± 13.88	$p < 0.001$
s3	7.51 ± 3.72	9.30 ± 9.02	n.s.
s 4	4.30 ± 6.96	12.22 ± 10.54	$p < 0.001$

2. Experiment 2

Table 2 shows the relation between the style of night clothes and three parameters. The mean of FB for pajamas was recorded at 3.00 ± 1.46

movements and 3.73 ± 2.20 movements for negligee, therefore FB increased from pajamas to negligee. The mean of MR for pajamas was recorded at 25.04 ± 11.75 min. and 22.67 ± 14.53 min. for negligee, therefore MR decreased from pajamas to negligee. The mean of MAR for pajamas was recorded at 109.34 ± 47.63 min. and 98.71 ± 46.12 min. for negligee, therefore MAR decreased from pajamas to negligee. Although there were no significant differences in the three parameters, the sensory evaluation indicated pajamas were more comfortable ($p < 0.05$).

Table 2. Comparison of three parameters of body movements during sleep between the pajamas and negligee
Data are mean \pm S.D. (N=5).

	Pajama	Negligee	Significance
Frequency of body movements per hour (movement)	3.00 ± 1.46	3.73 ± 2.20	n.s.
Mean rest period time (min.)	25.04 ± 11.75	22.67 ± 14.53	n.s.
Maximum rest period time (min.)	109.34 ± 47.63	98.71 ± 46.12	n.s.

DISCUSSION

It is interesting to consider the relation between the style of night clothes and comfort. In Japan, the typical styles of night clothes are pajamas, negligee, and kimono. In survey research, more than 79% of the 18-50 age-status subjects and 58% of the 51+ age-status subjects wore pajamas. 68% — 79% of the subjects thought that there was some relation between the style of night clothes and the quality of sleep. Subjective assessment for the most comfortable night clothing was pajamas. In experiments, the comfort of pajamas was thought to be more than negligee. The reason pajamas showed a higher quality is that the variations of hem line of pajamas are small and the thermal conditions are good.

CONCLUSIONS

This study was conducted in order to evaluate the style of night clothes by

using three parameters under the experimental design of Latin square. Two styles of night clothes were tested, pajamas and negligee. These clothes were made of the same fibers and fabrics.

The results obtained were as follows;

- 1) The objective evaluation on three parameters suggests that pajamas are the most comfortable, though differences were not significant.
- 2) The subjective evaluation on two styles of night clothes was that pajamas was the most comfortable.
- 3) It was clear that the style of night clothes affects the comfort of sleep.

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