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 Mandom Corporation  
 Kwansei Gakuin University

## Mandom and Kwansei Gakuin University prove that using wet wipes can increase positive mood

- Using psychological methods to develop a scale that can evaluate changes in mood state due to the use of wet wipes-

Mandom Corporation (Headquarters: Osaka; President Executive Officer and Director: Motonobu Nishimura; hereafter called “Mandom”) has been working on research and development to achieve a pleasant cooling sensation in cooling cosmetics such as wet wipes (The product name is “Body Paper”), searching for ways to achieve greater sensations of skin comfort.

In collaboration with Jun’ichi Katayama, Professor in the Department of Psychological Science and the Director of the Center for Applied Psychological Science (KGU CAPS), Mandom has developed a scale for measuring the mood state of individuals when they use wet wipes. The scale makes it possible to numerically capture the changes in the mood state. The researchers found that the mood state-related factors that increased after using wet wipes were those correlated with positive affect.

Applying the results of this research will further advance the research and development of cosmetics that can evoke positive moods based on a profound understanding of the psychological processes that underly human perception.

A part of this research was announced at the 28th Annual Meeting of the Japan Society for Research on Emotions (June 20-30, 2020).

### (1) Developing a scale to measure mood states relating to wet wipe use

The researchers asked 16 university students (6 male and 10 female) who habitually use wet wipes to write down all the words that came to mind when using commercially available wet wipes, and extracted words relating to mood states such as “refreshed,” and “calmed.” The researchers then asked another 83 university students (45 male, 38 female) to use a model wet wipe containing menthol and alcohol, and evaluated the sensation in relation to the extracted words from “1: Does not feel that way at all” to “5: Very much feel that way.” The researchers searched for common mood state-related factors in

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the obtained evaluation data (\*1), and found that the structure of participants' mood states when using wet wipes could be evaluated by a total of 14 items. These items included six that expressed feeling **refreshing mood**, such as “refreshed” and “relieved,” five items that expressed feeling **relaxing mood** such as “calmed” and “soothed,” and three items expressing feeling **energized mood**, such as “positive” and “cheerful” (Table 1).

Based on these results, it was possible to evaluate participants' mood states when using wet wipes with a high degree of accuracy, by evaluating the 14 items that make up the three mood state-related factors.

### (2) A correlation with positive affect

The researchers confirmed the correlation between the three mood state-related factors and the Japanese version of Positive and Negative Affect Schedule (PANAS) (\*2), and found that all the mood state-related factors (**refreshing mood**, **relaxing mood**, and **energized mood**) were significantly positively correlated with the positive affect in the Japanese version of PANAS in all the timeframes tested: before using wet wipes; immediately after use; 5 minutes after use; and 10 minutes after use. In particular, it was found that there is a high correlation with the **energized mood** factor (Table 2). In other words, these findings suggest that feelings **refreshing mood**, **relaxing mood**, and **energized mood** are psychological scales associated with positive affect.

### (3) Evaluation of commercial wet wipes using a psychological scale

Using the developed psychological scale, the researchers evaluated changes in the mood state of participants when using commercially available wet wipes (cooling-type). Participants were asked to use wet wipes after a mild exercise task (three minutes of squats at a room temperature of 27°C), which was presumed to be an amount of exercise equivalent to that of commuting in the summer. Participants' mood states at three-time points (immediately after exercise; immediately after using wet wipes; and 20 minutes after using wet wipes) were evaluated in comparison with their mood state before exercise.

#### Result (1): There was an increase in positive moods when using wet wipes after exercise

The researchers calculated the difference from the score before exercise, revealing a negative score for all mood state factors immediately after exercise. However, when participants used wet wipes, their scores for all mood factors increased. In particular, scores for feeling **refreshing mood** immediately after using wet wipes showed the largest increase (Fig. 1).

#### Result (2): Positive moods increased more with wet wipes than with general-use moistened hand towels

Next, the researchers calculated the difference between the scores immediately after exercise, comparing them with scores immediately after use and 20 minutes after use for both wet wipes and

moistened hand towels (these were a non-woven fabric moistened with water; i.e., general-use commercial moistened hand towels). The results revealed that there were significantly higher scores for wet wipes in comparison with hand towels, in terms of feeling **refreshing mood** and **energized mood**, both immediately after use and 20 minutes after use (Figs. 2 and 4). Participants also tended to score highly for feeling **relaxing mood** 20 minutes after use (Fig. 3).

Moving forward, Mandom will continue to prioritize the feelings of individuals and will work to advance technological developments that can contribute to the wellness of consumers through research and development with an emphasis on the psychological processes that are at work when using a product.

- \*1 Searching for common mood state-related factors  
The researchers conducted exploratory factor analysis, which is a statistical method used in developing psychological measures. Exploratory factor analysis is a method of searching for factors that can explain the correlation between observed variables derived from obtained from evaluation results.
- \*2 What is the Japanese version of PANAS?  
PANAS is an abbreviation of the Positive and Negative Affect Schedule, an index that measures positive and negative emotions. It has been confirmed to have stable reliability and validity, and is used in many studies.

【Reference materials】

Table 1  
Mood state when using wet wipes.  
The numerical values indicate factor loading (\*)

Mood state-related factors	Factor1	Factor2	Factor3	
スッパリした (Re-energized)	0.996	-0.075	-0.068	Refreshed
スカッとした (Relieved)	0.917	-0.047	0.006	
清潔感がある (Cool)	0.871	-0.025	0.034	
快適な (Comfortable)	0.818	0.076	0.033	Relaxed
リフレッシュした (Refreshed)	0.802	0.031	0.109	
さわやかな (Fresh)	0.748	0.036	0.090	
安んじた (Calmed)	-0.108	0.934	-0.017	Energized
癒された (Healed)	0.257	0.875	-0.267	
優しい (Kind)	-0.068	0.756	0.227	
落ち着く (Soothed)	0.094	0.615	0.069	
脱力した (Relaxed)	-0.138	0.686	0.166	
前向きな (Positive)	0.105	-0.085	0.977	
元気な (Cheerful)	0.004	0.102	0.925	
やる気がある (Motivated)	0.087	0.235	0.496	

Table 2  
Correlation coefficients between the three factors and positive emotions from the Japanese version of PANAS

Factors	Refreshed	Relaxed	Energized
	Immediately after exercise	0.404***	0.461***
Immediately after use	0.415***	0.471***	0.777***
5 minutes after use	0.467***	0.397**	0.672***
10 minutes after use	0.433***	0.438***	0.735***

\*\*\*p<0.001, \*\*p<0.01, \*p<0.05

Correlation coefficients low : <0.4 Moderate : 0.4~0.6 High : 0.6<

(\*) Factor loading  
The factor loading amount represents the degree of influence of each factor on each evaluation item with a numerical value of -1 to 1. The values can be regarded as the strength of the relationship between each factor and each evaluation item.

Figure 1  
Change in mood state when using wet wipes  
(Increase from before exercise)

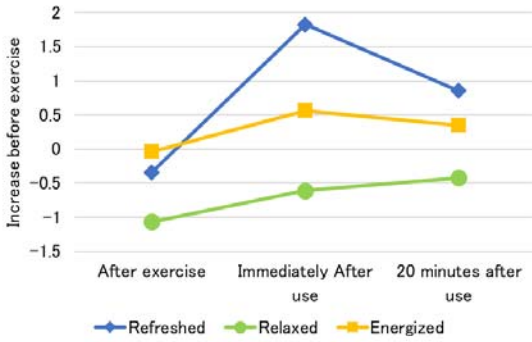


Figure 2  
**Refreshed mood** by the use of wet wipes  
(Increase from immediately after exercise)

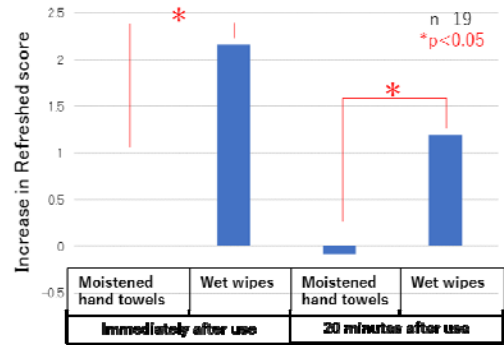


Figure 3  
**Relaxed mood** by the use of wet wipes  
(Increase from immediately after exercise)

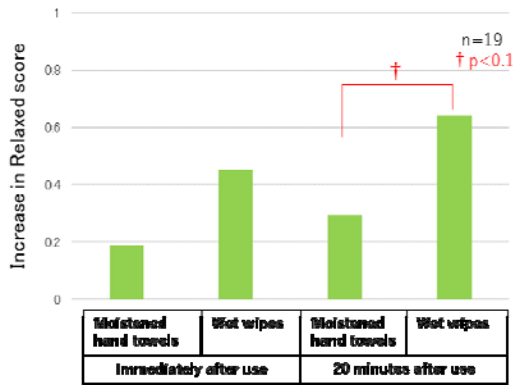
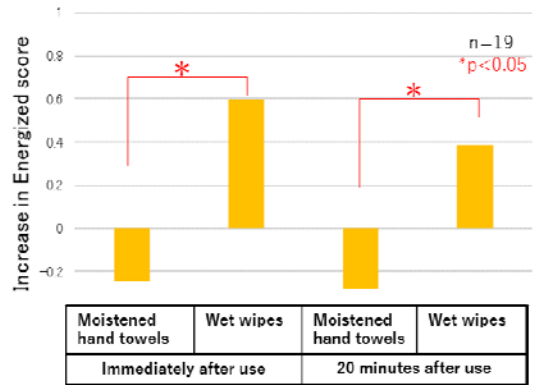


Figure 4  
**Energized mood** by the use of wet wipes  
(Increase from immediately after exercise)



End