Relationship between Bathing Habits and Physical and Psychological State

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Abstract

Background: Bathing is an important behavior for keeping the body clean and is one of the habits of daily life. Among other things, bathing is regarded as a means of relieving fatigue, refreshing oneself, benefiting health, and improving sleep. As such it can be considered a health-maintaining activity. Apart from a previous study by the authors, there has been very little research on the relationship between home bathing habits and health.

Objective: The aim of this study was, therefore, to clarify how physical and mental health relate to daily bathing in the home, particularly the habit of full bath immersion.

Method: The participants were 198 employees of a quasi-drug manufacturing company and their family members who could and cooperated in the present study. The study was conducted as a self-report survey from October 1–30, 2010, with questionnaires being distributed to and collected from subjects before and after this period. Participants were asked about their sex, age, frequency of bathing per week, frequency of use of bath additives per week, temperature of bath water, bathing duration, and water level when in the bath, health, and sleep quality. Health was assessed using the Profile of Mood States (POMS) inventory, and self-rated health and quality of sleep were assessed using a Visual Analog Scale (VAS).

Results: Among bathing habits, the group with a high bath frequency had significantly low scores for tension-anxiety and depression-dejection mood scales, and significantly high self-rated health. In the present study, self-rated health and quality of sleep were significantly better in the group who frequently used bath additives. In the full bath group, Fatigue score was significantly low and self-rated health and quality of sleep scores were significantly high.

Discussion and Conclusion: Taking a full bath frequently and frequent use of bath additives are bathing habits that increase physical and psychological health in the middle-aged .

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I INTRODUCTION

Bathing is an important behavior for keeping the body clean and is one of the habits of daily life. Among other things, bathing is regarded as a means of relieving fatigue, refreshing oneself, benefiting health, and improving sleep. As such it can be considered a health-maintaining activity.[1] Until now, research on this subject has mainly looked at bathing in hot springs and its relationship to health maintenance.[2)-6)]

Naturally, only people living near hot springs have the opportunity to bathe daily in one; most of the population would be expected to bathe in their own homes. Apart from a previous study by the authors,[7] there has been very little research on the relationship between home bathing habits and health. Bathing styles involve a full bath (body immersed up to the shoulders), a half bath, or whole-body bathing, and although a full bath is the most common type of home bathing in Japan, some people, particularly the young, make do with a whole-body bathing.[1), 8)] However, the recent growing awareness of the need to save energy has also driven a trend toward taking a whole-body bathing only.[9] The number of elderly people taking a whole-body bathing only is also increasing.[10] Bathing time also varies from person to person, and the optimum bathing style for health maintenance is unclear. The hyperthermic effect of a whole-body bathing is weaker than that of soaking the body in a bath.[8] A full bath with the trunk fully immersed is thought to be more effective than a whole-body bathing in relieving fatigue as it promotes blood circulation, hypothermic effect, relaxation, and changes to the autonomic nervous system among others.[11), 12)]

The aim of this study was, therefore, to clarify how physical and mental health relate to daily bathing in the home, particularly the habit of full bath immersion.

II METHOD

1. Participants

The participants were 198 employees of a quasi-drug manufacturing company and their family members who could cooperate in the present study. The study was conducted as a self-report survey from October 1–30, 2010, with questionnaires being distributed to and collected from subjects before and after this period. After receiving an explanation of the experiment and signing a study consent form, participants were sent a questionnaire and a thermometer for taking the water temperature when bathing.

2. Bathing habit items studied

Participants were asked about their sex, age, frequency of bathing per week, frequency of use of bath additives per week, temperature of bath water, bathing duration, and water level when in the bath, health, and sleep quality. Temperature of the bath water during the bath was measured using the supplied thermometer (AD-5622, A & D, Tokyo, Japan). Bath duration was

the total time spent immersed in the bathtub, which was self-reported rather than objectively measured. For water level when in the bath, participants were asked to indicate the parts of their body immersed in the water. Health was assessed using the Profile of Mood States (POMS)[13] inventory, and self-rated health and quality of sleep were assessed using a Visual Analog Scale (VAS).[14] The POMS is an assessment tool providing a picture of a person's mood states persisting during the previous week. It uses 65 questions to obtain scores on six affective scales: tension-anxiety (TA), depression-dejection (D), anger-hostility (AH), vigor (V), fatigue (F), and confusion (C). The higher the score on each scale the greater the intensity of mood. The VAS for assessing self-rated health and quality of sleep required participants to place a mark on a line 10 cm in length indicating their current state, in order that the distance from the end could be precisely measured. Self-rated health was represented by 0 for the best state and 10 for the worst state. The same method was applied to measure sleep quality.

Ⅲ METHOD OF ANALYSIS

First, the response percentages for each item were recorded separately for male and female participants. The relationship between bathing habits and health was then analyzed by dividing each bathing habit-related item (frequency of bathing, frequency of use of bath additives, temperature of bath water, bathing duration, water level) into two groups based on the respondent's scores as described below, and determining the relationship of these items with the six POMS scales, self-rated health, and quality of sleep by using the t-test. We also performed an analysis of covariance (ANCOVA) adjusted for sex and age. Frequency of bathing was divided into a low-frequency group (<3 per week) and a high-frequency group (≥ 3 per week). Frequency of use of bath additives was divided into a low-frequency group ($\leq 60\%$ baths) and a high-frequency group ($\geq 70\%$ baths). For water temperature, a mean value of 40.14℃ was taken as the dividing point for the low-temperature group and high-temperature group in order that the number of participants in each group was roughly equal. For bath duration, a mean value of 11.95 min was taken as the dividing point for the short group and long group in order that the number of participants in each group was roughly equal. Water level was divided into the full bath group and non-full bath group. A full bath was defined as either a water level covering the shoulders or covering up to the armpits with the shoulders exposed. This study was conducted with the approval of the Ethics Committee of Hamamatsu University School of Medicine, and after receiving informed consent from the participants.

Ⅳ RESULTS

Table 1 shows the sex, age, and bathing habits of the participants.

The participants who returned their questionnaires were composed of 130 men (mean age, 45.5 ± 6.0 [standard deviation: S.D.] years) and 59 women (mean age, 41.3 ± 7.0 years) , for a total response rate of around 95%. In terms of bathing habits, 128 participants (67.7%) took ≥ 7 baths per week and 112 participants (59.3%) used a bath additive every day. The most common water

temperature was 40–41℃, reported by 70 participants (40.2%). The mean temperature of water was 40.14 ± 1.14. (man: 40.23 ± 1.12℃, woman: 39.95 ± 1.19℃)

The most common bath duration was 10–15 min, reported by 58 participants (30.9%). The mean bathing duration was 11.95 ± 9.03 min. (man: 11.43 ± 8.94 min, woman: 13.08 ± 9.21 min) In terms of water level, 167 participants (83.3%) took a full bath, with 63 participants (33.3%) reporting a water level covering the shoulders and 104 participants (55.0%) having shoulders exposed.

Keeping the same group divisions as above, the relationship of each bathing habit to the six POMS scales was analyzed using the t-test. Table 2 also shows the results of the ANCOVA adjusted for sex and age.

Table 1 The sex, age, and bathing habits of the participants

	total	men	women
sex n (%)	189(100%)	130 (68.8%)	59 (31.2%)
age (mean age ± S.D years)	n=189	n=130	n=59
	44.2 ± 6.6	45.5 ± 6.0	41.3 ± 7.0
frequency of bathing per week n (%)	n=189	n=130	n=59
0/week	7 (3.7%)	5 (3.8%)	2 (3.4%)
1～2/week	14 (7.4%)	10 (7.7%)	4 (6.8%)
3～4/week	18 (9.5%)	12 (9.2%)	6 (10.2%)
5～6/week	22 (11.6%)	14 (10.8%)	8 (13.6%)
7≤/week	128 (67.7%)	89 (68.5%)	39 (66.1%)
frequency of use of bath additives per week n (%)	n=189	n=130	n=59
0%/week	13 (6.9%)	10 (7.7%)	3 (5.1%)
10～30%/week	10 (5.3%)	7 (5.4%)	3 (5.1%)
40～60%/week	18 (9.5%)	10 (7.7%)	8 (13.6%)
70～90%/week	36 (19.0%)	25 (19.2%)	11 (18.6%)
100%/week	112 (59.3%)	78 (60.0%)	34 (57.6%)
temperature of bath water n (%)	n=174	n=121	n=53
≤39℃	23 (13.2%)	13 (10.7%)	10 (18.9%)
39～40℃	31 (17.8%)	21 (17.4%)	10 (18.9%)
40～41℃	70 (40.2%)	48 (39.7%)	22 (41.5%)
41～42℃	32 (18.4%)	25 (20.7%)	7 (13.2%)
42℃≤	18 (10.3%)	14 (11.6%)	4 (7.5%)
bathing duration n (%)	n=188	n=130	n=58
≤5min	19 (10.1%)	16 (12.3%)	3 (5.2%)
5～10min	51 (27.1%)	36 (27.7%)	15 (25.9%)
10～15min	58 (30.9%)	37 (28.5%)	21 (36.2%)
15～20min	25 (13.3%)	19 (14.6%)	6 (10.3%)
20min≤	35 (18.6%)	22 (16.9%)	13 (22.4%)
water level when in the bath n (%)	n=189	n=130	n=59
covering the shoulders	63 (33.3%)	46 (35.4%)	17 (28.8%)
shoulders exposed	104 (55.0%)	68 (52.3%)	36 (61.0%)
solar plexus	11 (5.8%)	7 (5.4%)	4 (6.8%)
umbilicus	4 (2.1%)	3 (2.3%)	1 (1.7%)
other	7 (3.7%)	6 (4.6%)	1 (1.7%)

The mean values in Table 2 are unadjusted values. The p value is based on the t-test and the covariant p value is based on the ANCOVA.

T-A and D scores were significantly low in the high-frequency bath group, V scores tended to be high in the high-frequency bath additive use group, F and D scores tended to be high and T-A significantly high in the long bath duration group, and D and A-H tended to be low and F significantly low in the full bath group.

Keeping the same group divisions as above, the relationship of each bathing habit to self-rated health and quality of sleep was analyzed next using the t-test. Table 3 shows the results as well as those of the ANCOVA adjusted for sex and age. The mean values in Table 3 are unadjusted values. The p value is based on the t-test and the covariant p value is based on the ANCOVA. Self-rated health was found to be significantly high in the high-frequency bath group. Both self-rated health and quality of sleep were significantly high in the high-frequency bath additive use group and in the full bath group.

V DISCUSSION

We investigated the relationship between home bathing habits and psychological state, self-rated health, and quality of sleep. Questionnaires were distributed to 198 participants who were able to participate in this study in advance, and were collected from 189 of these participants, which was a high collection rate of around 95%.

Table 2 The relationship of each bathing habit to the six POMS scores analyzed by t-test and ANCOVA)

	tension-anxiety (TA)			depression-dejection (D)			anger-hostility (AH)			vigor (V)			fatigue (F)			confusion(c)		
	mean±SD	p	covariant p	mean±SD	p	covariant p	mean±SD	p	covariant p	mean±SD	p	covariant p	mean±SD	p	covariant p	mean±SD	p	covariant p
frequency of bathing per week(n=187)																		
low-frequency group (<3 per week) n=21	50.3±12.4	0.015*	0.051	51.6±12.6	0.245	0.039*	51.0±10.3	0.605	0.389	48.8±9.8	0.620	0.460	51.2±11.1	0.433	0.230	49.3±9.3	0.309	0.158
high-frequency group (≥3 per week) n=166	46.1±9.6			48.3±7.7			49.8±10.1			49.9±10.5			49.2±9.9			47.1±9.1		
frequency of use of bath additives per week (n=187)																		
low-frequency group (≤6/10 baths) n=40	46.9±9.1	0.821	0.843	50.3±8.3	0.164	0.146	50.3±9.6	0.781	0.652	47.4±8.7	0.072	0.141	50.0±10.1	0.703	0.659	48.3±7.2	0.374	0.492
high-frequency group (≥7/10 baths) n=147	46.5±10.3			48.2±8.4			49.8±10.3			50.4±10.8			49.3±10.1			47.1±9.6		
temperature of bath water (n=172)																		
low-temperature group(≤40.14℃) n=97	46.6±9.5	0.856	0.979	48.4±7.6	0.801	0.674	49.8±9.8	0.893	0.995	49.8±10.0	0.941	0.877	48.3±9.9	0.169	0.120	47.0±8.8	0.585	0.479
high-temperature group(40.14℃≤) n=75	46.3±10.1			48.7±8.6			49.6±10.5			49.9±10.5			50.4±10.0			47.8±9.8		
bathing duration (n=186)																		
short group(≤11.95min) n=126	45.3±9.2	0.018*	0.012*	48.0±7.6	0.129	0.084	49.3±9.2	0.267	0.188	49.4±10.4	0.702	0.735	48.6±9.5	0.098	0.072	46.6±8.7	0.111	0.086
long group(11.95min≤) n=60	49.3±11.2			50.2±9.8			51.3±11.8			50.0±9.9			51.4±11.0			49.0±9.8		
water level when in the bath (n=187)																		
full bath group n=166	46.3±10.0	0.212	0.149	48.2±8.3	0.068	0.053	49.4±10.2	0.065	0.055	50.1±10.7	0.122	0.238	48.9±9.9	0.066	0.027*	47.1±9.5	0.189	0.291
non-full bath group n=21	49.1±9.5			52.0±8.5			53.5±9.0			47.2±7.3			53.5±10.4			49.0±5.6		

*p<0.05

Table 3 The relationship of each bathing habit to self-rated health and quality of sleep analyzed by t-test and ANCOVA

		self-rated health				quality of sleep		
		mean±SD	p	covariant p		mean±SD	p	covariant p
frequency of bathing per week	(n=185)				(n=185)			
low-frequency group (<3 per week)	(n=20)	4.90±2.07	0.047 *	0.024*	(n=22)	5.23±2.72	0.376	0.127
high-frequency group (≥3 per week)	(n=165)	3.86±2.16			(n=165)	4.68±2.47		
frequency of use of bath additives per week	(n=185)				(n=187)			
low-frequency group (≤6/10 baths)	(n=39)	4.64±1.92	0.022 *	0.051	(n=41)	5.58±2.39	0.014 *	0.010 **
high-frequency group (≥7/10 baths)	(n=146)	3.80±2.21			(n=146)	4.51±2.49		
temperature of bath water	(n=174)				(n=172)			
low-temperature group(≤40.14℃)	(n=99)	3.94±2.07	0.800	0.830	(n=98)	4.92±2.36	0.170	0.241
high-temperature group(40.14℃≤)	(n=75)	3.86±2.22			(n=74)	4.38±2.70		
bathing duration	(n=184)				(n=186)			
short group(≤11.95min)	(n=123)	3.94±2.08	0.748	0.736	(n=126)	4.67±2.38	0.652	0.568
long group(11.95min≤)	(n=61)	4.05±2.38			(n=60)	4.86±2.77		
water level when in the bath	(n=185)				(n=185)			
full bath group	(n=165)	3.81±2.15	0.003 **	0.003 **	(n=165)	4.58±2.49	0.014 *	0.003 *
non-full bath group	(n=20)	5.31±1.92			(n=20)	5.95±2.27		

*p<0.05, **p<0.01

Among bathing habits, the group with a high bath frequency had significantly low scores for T-A and D mood scales, and significantly high self-rated health. T-A represents tension and anxiety, with a lower score indicating milder stress, and D represents depression-dejection, with a lower score indicating milder depression.This could be because the warming the body and feelings of relaxation produced by bathing promote both relief from fatigue and emotional stability, and by making this a habit, physical and psychological health are improved.

Bathing warms the body, improves circulation, and is relaxing due to the effects of hyperthermic, hydrostatic pressure, and buoyancy.[15] According to Matsuura et al., the heating effect of a bath is superior to that of whole-body bathing.[8] As a result of bathing in hot springs or bathtub, the heating effect raises the deep body temperature and dilates the blood vessels, resulting in systemic enhancement of metabolism and excretion of waste products, which in turn leads to the relief of fatigue and alleviation of pain.[12] A further effect is the normalization of biorhythms, which have a regulatory effect on the autonomic nerves, which are disrupted by stress.[16] It has also been noted that repeated daily exposure to thermal stress could produce more than just temporary changes.[4] These studies indicate that taking a single warm bath has the effect of promoting relief from fatigue and eliminating stress, and if taken repeatedly, warm baths enhance physical and psychological health.

The contribution of bathing frequency to self-rated health was investigated by Hayasaka et al. in a study of residents with an average age of 64.1 ± 7.9 (S.D) years in a particular area.[7] A 5-year prospective cohort study of bathing habits and numbers of people requiring primary nursing care also found significantly greater independence among people who took a bath at

least 7 times a week, indicating that bathing has a strong health-maintaining effect.[17] A relationship between bathing frequency and physical and psychological health was observed in our study participants, even though their mean age was 44.2 ± 6.6 years, an age group well endowed with physical strength and vitality. Thus, it is possible that this enhancement of physical and psychological health by frequent bathing could equally apply to the middle-aged as well as the elderly.

In the present study, self-rated health and quality of sleep were significantly better in the group who frequently used bath additives. This finding suggests that taking a bath using bath additives can improve sleep quality and further enhance a feeling of health. Previous studies have found that compared to freshly heated bath, bathing with bath additives has a greater hyperthermic effect during bathing and greater maintenance of body heat afterwards.[18), 19] The effects of bath additive ingredients such as inorganic salts, natural remedies, and carbon dioxide include hyperthermic effect, promotion of blood flow, and moisture retention.[20), 21] Bath additives have also been blended with fragrances and colorings in order to sooth the nerves and alleviate tension.[21] Using CNV (Contingent Negative Variation), Tsunakawa showed that bath additives increase the calming effect of a bath.[22] By measuring the brain's alpha waves, Suzuki et al. found that a bath with bath additives has an excellent relaxing effect.[23] Furthermore, in a survey of hotel guests, Watanabe et al. reported that 71.2% of guests felt an improvement in their sleep quality as a result of using bath additives.[24] It might be concluded from these studies that if sleep quality is enhanced by bathing using bath additives, individuals will not feel fatigued when getting up in the morning and will thus feel more healthy.

T-A score was significantly high in the group who took long baths, and their C, D, and F scores also tended to be high. Bath duration did not show a normal distribution: the most common bath duration was 10–15 min, followed by 5–10 min, and >20 min. The latter group contained many people who spent a very long time in the bath, including some who spent 70 min in the bath, and may constitute a special group. The figures for those people who spent a very long time in the bath could have had the effect of increasing the figures for the T-A and other subscales. It is probable that a moderate bathing time leads to good health. This study was conducted in October, so the bath temperatures and durations were restricted to October conditions. It has been reported that bath temperature and duration vary according to the season: baths tend to be hotter and longer in winter than in summer, with an average bath being 41.2℃ and lasting 12.7 min in winter, compared to 39.4℃ and 9.4 min in summer.[25] Since we collected data only for October, one limitation of this study is that our analysis did not take account of seasonal variations. Further study will be required to elucidate the relationship between health and bathing in the light of seasonal variations in bathing habits.

In the full bath group, F score was significantly low and self-rated health and quality of sleep scores were significantly high. D and A-H scores also tended to be low. This is probably linked primarily to the hyperthermic effect, hydrostatic pressure effect, and buoyancy produced by bathing.According to Miwa et al. a full bath produces a greater hyperthermic effect than a half

bath,[26] while Matsuura et al. suggest that a full bath leads to good quality sleep through the transient increase in body temperature and stimulation of the autonomic nervous system after entering the bath, and subsequent changes.[27] Watanabe et al. studied changes in body temperature and the autonomic nervous system in participants taking full baths and half baths, together with sleep quality after bathing, and found that a full bath leads to good sleep.[28] One study found that by taking a bath, the body temperature was raised by 0.5–1.0℃ and sleep quality at night after the bath was improved, with a significant shortening of sleep onset latency and a significant increase in slow-wave sleep in the first half of sleep.[29] Since the rise in body temperature is greater with a full bath than a half bath, the present study further supports the likelihood that sleep quality is influenced by hyperthermic effect. Hydrostatic pressure is also higher in a full bath than a half bath, and promotes blood flow, leading to the elimination of waste products in tissue, stimulation of metabolism, and alleviation of pain.[30] Furthermore, buoyancy has a relaxing effect.When body temperature changes, enhanced blood flow and the relaxing action of a full bath alleviate feelings of fatigue and lead to good quality sleep, so they would also be expected to enhance the self-rated health.

Our participants were in an age group well-endowed with physical strength and vitality. Because of shorter bathing times due to busy lifestyles and increased awareness of the need to reduce energy consumption, the whole-body bathing has become a more common bathing style in recent years.[9] However, the influence, as found by our study, of bathing habits such as full-bath bathing and the use of bath additives on a person's physical and psychological state can be regarded as a way of maintaining health among those in the prime of life.

In the other hand, we have some limitations. Because our study uses a cross-sectional design, the possibility of cause-effect reversal cannot be ruled out. However, despite this limitation, the results are valuable since there are no detailed studies on home bathing habits and health to date. The participants may also have had high expectations about bathing and bath additives, since they were employees and their families of a company that produces, among other things, bath additives. However, the possibility of bias in the results is low, since the research method utilized reliable and standardized questionnaires.

In conclusion, taking a full bath frequently and frequent use of bath additives are bathing habits that increase physical and psychological health in the middle-aged through the combined effect of factors including heat, enhanced blood flow, and relaxation.

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Conflict of interest

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References

1) Takehara H, Yanase T, Nishikawa K, et al: The Survey on bathroom environment and residential consciousness (Part 2) On the residential consciousness and interest in bathing. J Home Econom 2001; 52: 1005–1013.
2) Kagamimori S: Hot Springs and Health, Balneology, Private Vitality Development Organization, editor. Byupuro Co., Ltd, Tokyo, 2006; p129–134.
3) Nobunaga M, Katagiri S, Kubota K: Effect of Short Staying Spa Therapy on QOL. J Jpn Soc Balneol Climatol Phys Med 2002; 65: 161–176.
4) Nobunaga M, Katagiri S, Kubota K: Supplements to the Article "Effect of Short Staying Spa Therapy on QOL". J Jpn Soc Balneol Climatol Phys Med 2003; 66: 131–135.
5) Kagamimori S, Tatsuse T, Nakatani Y, et al: Does the Hot Spring Contribute to the Active Life Expectancy? The 3 years follow-up survey in the J town which commenced health promotion facilities using hot spring, J Jpn Soc Balneol Climatol Phys Med 2006; 69: 187–194.
6) Ohtsuka Y: Immunological Changes by Balneotherapy, Balneology, Climatology and Physical Medicine, Japan Soc Balneol Climatol Phy Med, editor. JTB printing, Tokyo, 2004; p178–183.
7) Hayasaka S, Shibata Y, Goto Y, et al: Bathing in a bathtub and health status: A cross-sectional study, Complem Ther Clin Prac 2010; 16: 219–221.
8) Takamura M, Wada Y, Yamazaki M, et al: Relationship between Bathing Habits and Health among Young and Elderly Males: Explorative Study. J Heal Sci Univ 2010; 6: 151–171.
9) Shimokawa M, Tezuka T: A study on the characteristics of lifestyle forming family-living-area. Relationship to energy consumption behavior of the family. J Environ Eng: Transactions of AIJ. 2010; 75: 845–852.
10) Unification official of Policy to the Cabinet Office: A Research on the Senior Housing and Living Environment, Report of the Cabinet Office. 2011; 3.
11) Matsuura N, Watanabe S, Ishizawa T, et al: The Effect of Daily Bathing on Core Body Temperature, Heart Rate Variability and Nocturnal Sleep, Proc the 63rd Ann Meet Japan J Physiol Anthrop 2010; 15: 84–85.
12) Tanaka N: Physiology and Biochemistry of Hot Springs and bathing, New manual of Bath and Balneotherapy, Japan Soc Balneol Climatol Phy Med, editor. JTB printing, Tokyo, 2007; p7–11.
13) Yokoyama K, Araki S, Kawakami N, et al: Production of the japanese edition of profile of mood states (POMS): Assessment of reliability and validity. J Japan Soc Pub Heal 1990; 37: 913–918.
14) Murata S, Tsuda A, Inatani H: A study of self-assessment of perceived health among elderly. -Reliability and validity of Visual Analogue Scale-. Kurume Univ Psych Res 2004; 3: 89–98.
15) Ohtsuka Y: Advised of the correct bathing. Physiology of bathing, JIM 2000; 10: 830–834.
16) Mitsunobu F: Hot Springs bathing and Autonomic Functions Balneology, Climatology and Physical Medicine, Japan Soc Balneol Climatol Phys Med, editor. JTB printing, Tokyo, 2004; p212–218.
17) Organization of Balneotherapist in Japanese Association of Balneology, Climatology and Physical Medicine: Prospective 5yrs Cohort Study on the Correlation between Bathing Habit and Need for Long Term Care Insurance of Aged Subjects. J Jpn Soc Balneol Climatol

Phys Med 2011; 74: 200–206.
18) Ito M, Fujiwara T, Amano K, et al: Studies on the Thermal Preservability of Bath Preparations. J Japan Cosm Sci Soc 1982; 6: 175–180.
19) Tanaka N, Hiyoshi T, Takesako K, et al: Effects of Artificial Mineral Spring (Basukurin) on Hemodynamic Functions, Deep Body Temperature, Autonomic Nervous Functions and Blood Gas Concentration. J Jpn Soc Balneol Climatol Phys Med 1987; 50: 187-196.
20) Horikiri Y: Bath additive with crude drugs and inorganic salt Balneology, Climatology and Physical Medicine, Japan Soc Balneol Climatol Phys Med, editor. JTB printing, Tokyo, 2004; p126–131.
21) Maeda M: Bath additive with inorganic salt, crude drugs and Carbon Dioxide. New manual of Bath and Balneotherapy, Japan Soc Balneol Climatol Phys Med, editor. JTB printing, Tokyo, 2007; p41–47.
22) Tsunakawa M: Effect and Application on Bath additive of lavender. Aromatopia 1993; winter.
23) Suzuki N, Tachikawa M, Ishizawa T, et al: Psychophysiological evaluation of relaxation feelings in bathing with the bath additive. Proc 3rd Spring Conf Japan Soc Kansei Engin 2007; Abstracts B32.
24) Watanabe S, Fukuchi K, Ishizawa T, et al: The Effects of bath additive bathing and the sleep of the winter in the hotel. Proc 35rd Ann Meet Japan Soc Sleep Res 2010; p191.
25) Watanabe S, Takagi T, Ishizawa T, et al: The Effects of bathing actual situation in the winter and the summer. Proc 66rd Ann Meet Japan J Phys Anthropol 2012; 17: 104–105.
26) Miwa C, Kawahara Y, Iwase S, et al.: Effects of whole-and half-body bathing, and shower on energy consumption in humans. Autonom Nerv Sys 2004; 41: 495–501.
27) Matsuura N, Watanabe S, Ishizawa T, et al: The effect of bathing with bath additive on sleep initiation period; Preliminary study. Proc 34rd Ann Meet Japan Soc Sleep Res 2009; p196.
28) Watanabe S, Ishizawa T, Yano S, et al: The effects of bathing activity on body temperature, HRV and nocturnal sleep. Proc 36rd Ann Meet Japan Soc Sleep Res 2011; p159.
29) Kobayashi T: Temperature control by action in the daytime (bathing, exercise, cooling head, warm temperature control of place) Sleep Research, Japan Soc sleep res, editor, Asakura Publishing Co., Ltd Tokyo, 2009; p428–430.
30) Ide H: Physiology of Hydrostatic pressure and Buoyancy, Balneology, Climatology and Physical Medicine, Japan Soc Balneol, Climatol Phys Med, editor. JTB printing, Tokyo, 2004; p150–154.

入浴習慣と身体・心理状況との関連

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抄　録

背景：入浴は、身体を清潔に保つための重要な行為であり、生活習慣の一つである。入浴に対する意識は、疲れを取る、リフレッシュ、健康のため、睡眠をよく取るため等であり、健康維持と捉えることができる。しかし、これまで家庭での入浴習慣と健康状態との関係はほとんど研究されていない。

目的：本研究は家庭における日々の入浴と身体的・心理的健康状態との関係を明らかにすることを目的とした。

方法：健康成人男女198名を対象として調査を行った。入浴習慣の調査項目は、被験者の性別・年齢、浴槽浴頻度、入浴剤使用頻度、浴槽浴時湯温、浴槽浴時間、浴槽浴時水位について調査した。健康状態の調査項目は、気分プロフィール検査であるPOMS（Profile of Mood States）を用い、主観的健康感および睡眠の質についてはVAS（Visual Analogue Scale）を用いて評価した。

結果：浴槽浴頻度の高い群において、「緊張不安」および「抑うつ・落込み」が有意に低く、主観的健康感が有意に高かった。また、入浴剤使用頻度の高い群では、主観的健康感および睡眠の質が有意に高かった。全身浴群においては、「疲労感」が有意に低く、主観的健康感および睡眠の質が有意に高かった。

結論：入浴習慣と身体・心理状況との関連が、健康成人男女を対象として行った研究により明らかになった。全身浴による浴槽浴頻度および入浴剤使用頻度が高い入浴習慣は、中壮年の身体的・心理的健康状態を高めたと考えられた。

キーワード：入浴習慣、入浴剤、健康感、睡眠の質、POMS

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