

Press Release

To all members of the press, November 12, 2024

Verification experiment Report Phase 4 report by Phiten and "Nokosoku Rehab Center"* (*the largest self-funded rehabilitation center in Japan)

Reporting experimental results showing the effectiveness of Phiten "Healthy Light Bathing" improves the quality of rest during daytime naps

Phiten Co., Ltd. (Headquarters: Kyoto, Japan; President: Yoshihiro Hirata; hereinafter referred to as "Phiten") and Medirom Healthcare Technologies Inc. (Headquarters: Minato-ku, Tokyo; CEO: Koji Eguchi; listed on NASDAQ, USA: MRM; hereinafter referred to as "MEDIROM"), which operates a healthcare business, along with its subsidiary, Medirom Rehab Solutions Inc. (Headquarters: Minato-ku, Tokyo; Chairman: Yasuhiro Ito; hereinafter referred to as "Medirom Rehab Solutions"), which operates the self-funded rehabilitation facility "Nokosoku Rehab Center," have completed Phase 4 of their verification experiment: "Verification Experiment on the Effect of 'Healthy Light Bathing' on the Quality of Daytime Naps." During the experiment, ten subjects took naps while light was irradiated onto their lower back using both the Healthy Light Bathing Dome and a placebo dome of the same type, without Phiten technology. The quality of their rest was evaluated by comparing data from an Electroencephalograph (EEG) and a Holter Electrocardiogram (Holter ECG). The EEG results showed an increase in α waves and θ waves, indicating a more relaxed state when using the Healthy Light Bathing Dome. Furthermore, the Holter ECG results demonstrated that the LF/HF ratio, a stress indicator, was lower when using the Healthy Light Bathing Dome, suggesting an overall reduction in stress levels.

[Phiten's latest Technology: Light Technology, "Healthy Light Bathing"]

"Healthy Light Bathing" is a technology that uses light emitted through silicones and resins infused with proprietary materials such as METAX Carbon Ceramic. This technique, utilized in both the medical field and athlete care, is known for its potential to relax and unwind muscles in the irradiated area.

METAX Carbon Ceramic: A material created by combining special clay with Phiten's water-soluble metal technology, METAX, which is then molded, fired, and ground using the CarbonTech treatment. It can also be blended with other materials, such as silicone.

WEB site: <https://www.phiten-lifetec.com/products/healthylightbathing-shower/>

[Overview] Verification Experiment on the Effect of Healthy Light Bathing on the Quality of Daytime Naps

■ **Purpose:** To research the effects of Phiten's light technology, "Healthy Light Bathing," on living organisms through two main approaches.

■ **Investigator:** Phiten Co., Ltd. / Nokosoku Rehab Center

■ **Method:** Field research

The subject sat in a stable, forward-leaning position with their forearms supported on a desk and their head resting on their forearms, eyes closed. Light was irradiated onto the subject's lower back using either the Healthy Light Bathing Dome or a placebo dome. Even if the subject fell asleep, they adhered to the time management protocol during the experiment.

(Details)

- Single-blind crossover intervention using placebo equipment that is identical in appearance to the Healthy Light Bathing Dome, which utilizes Phiten technology.
- The intervention involved resting in a sitting position, with irradiation from both devices on the lower back for 15 minutes each, followed by a 5-minute walk before and after (total survey time per day was 45 minutes).
- The research was performed at the same time on both the first and second days, with the irradiation order crossed.
- Holter ECG was used to measure LF/HF ratios during both nighttime sleep to daytime on the first day, and daytime sleep on the second day. And brain waveforms were measured during the intervention.

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- A questionnaire regarding physical condition and the intervention content was administered before and after the intervention.

(Equipment used)

EEG (Muse, Muse S model), Waveform extraction (Media Seek, Neuro Switch),

Holter ECG (Suzuken Cardy 303 pico+), LF/HF data calculations (Dementia Front).

(Statistical Analysis)

Statistical analysis was performed using a paired t-test for the quantitative data, with a significance level set at $p < 0.05$.

(Implementation Period)

July 1st (Mon) - July 3rd (Wed), 2024

(Subject Conditions)

Male, aged 25-65, capable of understanding and executing the instructions for the survey

(Sample Size)

n=10

■ Data Analysis:

Holter ECG: Investigation of daily fluctuation patterns and establishment of baseline (from the previous day to Day 1), Comparison between the baseline and intervention periods (Day 1 to Day 2), Differences between daytime activity and intervention period: tension level at the time of intervention, etc.(from the previous day to Day1), Differences between nighttime sleep and intervention periods: degrees of rest (from the previous day to Day1), Comparison of presence/absence of Phiten technology during interventions (Day 1 and Day 2).

EEG: Normalization of α , β , and θ waves and calculation of power content distribution, Comparison between intervention/placebo periods (with and without Phiten technology), Comparison between intervention/placebo periods and walking periods

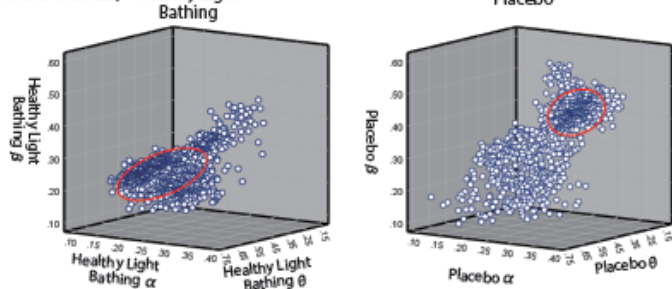


EEG Verification

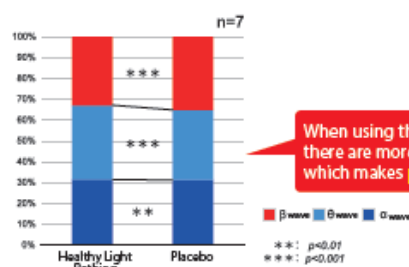
In a comparison between Healthy Light Bathing and placebo, β waves were significantly smaller in the Healthy Light Bathing group, while α and θ waves were significantly larger.

■ EEG scatter plot

Mr. B's first day



* If there is a bubble in the front and bottom, relaxation is high.



About each waveform of Brain Waves

α waves appear during rest, θ waves during light sleep, and β waves are generally seen during active product activity.



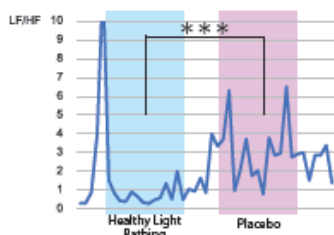
When using the Healthy Light Bathing Dome, there are more α and θ waves, which makes people feel more relaxed

Holter ECG Verification

In a comparison in which each LF/HF is normalized with the average during sleep as 1, the value of when using healthy light bathing is significantly lower

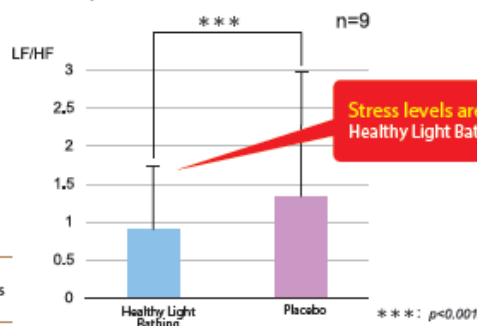
■ ECG waveform

Mr. A's first day



What is LF/HF?

The higher the number, the more the sympathetic nervous system is dominant and the more stressed it is, and the lower the number, the more relaxed it is. It depends on various physical and psychological conditions, and there are individual differences.



Stress levels are lower when using Healthy Light Bathing Dome

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Researcher's commentary: Masumi Tsuruno (Physical therapists at Nokosoku Rehab Center/Tokyo Ariake Medical University Lecturer)

NASA conducted a study in 1995 on the benefits of napping as a way to maintain focus during the day. This study led to the concept of the "Power Nap," which was later popularized by large companies in the United States. In recent years, many Japanese companies have also started to adopt this practice. Ongoing research indicates that performance can be enhanced with a nap of less than 30 minutes during the daytime. The main objective of this study was to improve the quality of rest, with a focus on the application of Phiten technology, which has been shown in previous tests to relax muscles. To measure the outcomes, brain wave components (α , β , and θ waves) and the LF/HF ratio, an index of the autonomic nervous system, were used. In a relaxed state, the α and θ wave components of the brain increase, β waves decrease, and the LF/HF ratio lowers. The comparison of naps taken with the Healthy Light Bathing versus a placebo (without Phiten technology) showed favorable results. The Healthy Light Bathing demonstrated that Phiten technology significantly improves rest quality. It is recommended that Healthy Light Bathing be widely and easily used not only for Power Naps but also for improving the quality of night sleep and rest in various situations.

<Company Profile>

Company Name: Phiten Co., Ltd. (URL: <https://www.phiten.com/>)
Address: 678 Tearaimizu-cho, Nishikikoji-kado, Karasuma-dori, Nakagyo-ku, Kyoto
Founded: October 4, 1983
Representative name: President, Yoshihiro Hirata
Business description: Manufacture and sale of cosmetics, quasi-drugs, and medical equipments, Manufacture and sale of sports-related products, health foods, health goods, and real estate business

Company name: MEDIROM Rehab Solutions, Inc. (URL: <https://medirom-rehab-solutions.co.jp/>)
Location: 16th Floor TRADEPIA ODAIBA, 2-3-1 Daiba, Minato-ku, Tokyo
Established: June 4, 2024
Representative name: President and CEO Yasuhiro Ito
Business description: Operating the non-insurance covered service "Nokosoku rehab center", rehabilitation service contracting business

* MEDIROM Rehab Solutions, Inc., a member of the MEDIROM Group, has taken over the operation of the non-insurance rehabilitation business "Nokosoku Rehab Center" from Y's.

[Contact for inquiries regarding this matter]

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