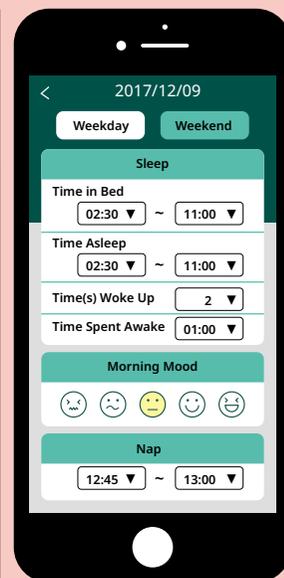


GOOD NIGHT: USING TECHNOLOGY FOR BETTER SLEEP

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A good night's rest is a prime source of vitality for the next day, but recently more people are having trouble sleeping. Smartphone applications and wearable devices are helping to combat this, visualizing sleep patterns and encouraging better lifestyle habits that boost sleep quality.



A screen capture of the Sleep Styles app, currently only available in Japanese

SLEEP—or the lack of it—has been raised as a social problem in developed countries, and is having a deep impact on health. According to data gathered by Teijin Ltd., sleep-deprived people are two and a half times more likely to develop illnesses such as diabetes compared to those who get enough rest. They are also 1.7 times more likely to be overweight, and related research data shows they're also more likely to develop dementia or depression. In fact, according to a survey by an American think tank, the lack of slumber is also having a negative economic impact in the United States to the sum of \$411 billion a year, and in Japan that sum is estimated to be up to \$138 billion.

Teijin launched its Sleep Styles® Sleep Wellness Program in response to this issue, and began offering it to corporations from April 2018.

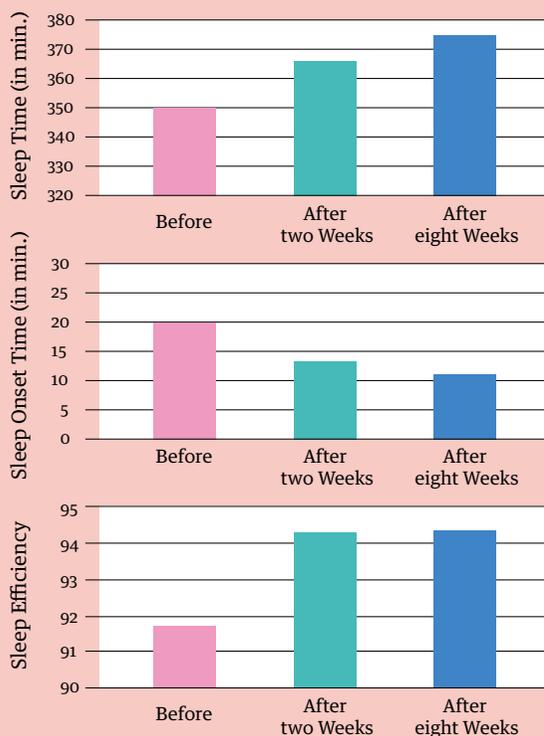
Yoichiro Hamazaki, general manager of the Digital Health Project at Teijin Ltd., explains the

situation. “Sleep is an issue that affects both health and the economy, and for corporations it also has crucial implications for accident risks and productivity. From an operational point of view, managing the health of staff is a strategic move that raises corporate value. Such corporate needs are increasing, which is why we launched this program.”

The Sleep Styles program boosts your ability to sleep via an eight-week program that refines lifestyle habits. It starts by assessing your sleeping habits through a smartphone-administered survey. That data helps to identify your sleep type, then recommends the most suitable sleep wellness method. Using the app, you can continue to refine your lifestyle habits and make regular beneficial changes. There is also an online course to help participants recognize the importance of sleep so that they understand the purpose of making changes.

Changes in sleeping habits

Results based on a final survey of 54 participants who completed the entire trial (out of 156 total participants).



The “2breathe” device records the wearer’s breathing rhythm and the app emits a sound to help slow that rhythm down

Teijin established five sleep style categories: Good, Sleep Debt, Poor Sleep Efficiency, Stressed, and Sleep Apnea Risk. People with irregular lifestyles who don’t get enough sleep on workdays and try to catch up on weekends fall into Sleep Debt category. Those who have difficulty sleeping despite having enough time to do so fall into the Poor Sleep Efficiency category. To help them, the company developed an original sleep coach app that records amounts of sleep and lifestyle rhythms. Users can visualize their sleeping patterns and make improvements in their lifestyle habits. Those in the Sleep Apnea Risk category have the option to take a simple screening test under the direction of a physician.

Teijin’s “2breathe” wearable device can help those suffering from tension or stress because of work pressures to naturally relax and get a good night’s sleep. 2breathe’s band wraps around the user’s abdomen and records their breathing rhythm, and then works in tandem with an app

that makes a sound to match this rhythm. The sound then gradually slows down to encourage a slower breathing rhythm, which leads to a state of relaxation and then sleep.

According to preliminary tests conducted on Teijin staff, participants who completed the program boosted their sleeping hours and shortened their sleep latency, the amount of time taken to fall asleep. Their sleep efficiency—the ratio of time in bed spent sleeping—also rose. They showed significant drops in stress levels as well, which led to more creativity in the workplace.

“We’re developing a device that can measure the state of sleep, but first we want to reach a level where individuals are aware of the quality of their own sleep and how to improve it,” Hamazaki says.

By improving the quality of sleep, we can expect an era in which people can avoid falling prey to lifestyle diseases and improve their productivity in a virtuous cycle. **7**