

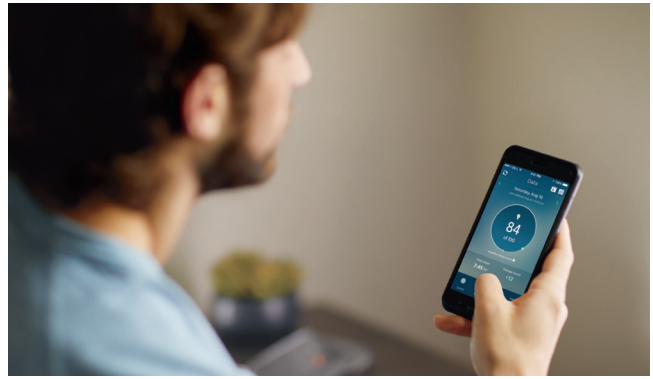
PHILIPS

SmartSleep



Discover SmartSleep

A new wave of innovation in sleep-assistive technology



The significance of sleep

Not getting enough sleep affects how our brain functions during waking hours. Slow wave activity (SWA) during sleep has beneficial effects on the restoration of brain function during the day. It has been shown that daytime alertness is positively influenced by achieving slow wave sleep at night.¹

The length and strength of slow waves matter

Recent studies have shown that the length and strength of slow waves during sleep play a pivotal role. It appears that the longer patients spend in slow wave sleep and the greater the intensity of the waves, the greater the benefit in daytime energy, verbal fluency and memory.²

Intervention during slow wave sleep can enhance slow wave activity

Given the importance of SWA, it's no surprise that a variety of methods have been implemented or proposed—from pharmaceutical interventions to electrical, magnetic and sensory stimulation.

Acoustic stimulation found to be effective at increasing SWA

Once investigated, acoustic stimulation, or sound, was found to be an effective way to enhance slow waves. Additionally, waves enhanced by sound were similar to those spontaneously generated slow waves observed during natural sleep.²





Philips SmartSleep

Setting the tone for the future of sleep

SmartSleep is a closed-loop, EEG-based wearable system that uses highly sensitive sensors to detect deep sleep in real time. When slow wave sleep is identified, the system uses auditory stimulation—a series of tones delivered at the right intensity and frequency, but most importantly, at the right point of wave formation—that matches the brain's natural wave rhythm. The tones increase the wave amplitude, yet do not cause arousals. When the deep-sleep phase is over, the system automatically stops delivering the sound. The SleepMapper app enables patients to see metrics on sleep patterns as well as the quality of sleep before and after using the system.³

Aligned with the literature, supported by the science

Study (n=34): A randomized double blind study was conducted with the SmartSleep device at four different clinical sites in the United States. The main focus of the study was to quantify the enhancement of SWA.

Results: This study showed—and confirmed prior published research—that auditory stimulation significantly enhances SWA, which mediates the restorative function of sleep.³ This study also demonstrated that the SmartSleep system could provide auditory stimulation in a safe and effective manner to enhance SWA in chronically and mildly sleep-restricted individuals.

For the patient who wants to put their sleep to work

SmartSleep is for patients who are mildly sleep-restricted but do not suffer from serious sleep conditions. SmartSleep is recommended for people who are between the ages of 18 and 40, sleep five to seven hours per night because of lifestyle demands not due to trouble sleeping, those who do not have difficulty falling asleep or staying asleep or do not have hearing loss.

To catch the new wave of innovation, find out more at [Philips.com/SmartSleep](https://www.philips.com/sleep)



References: 1. Garcia-Molina G, Mahadevan A. Slow Waves in the Sleeping Brain [Philips Research North America, University of Wisconsin-Madison, and Sleep and Respiratory Care, Philips Healthcare]. 2. Tononi G, Riedner B, Hulse B, Ferrarelli F, Sarasso S. Enhancing sleep slow waves with natural stimuli. *Medicamundi*. 2010;54(2):82-88. 3. Mahadevan A, Molina G. SmartSleep: quantifying slow wave activity enhancement. Sleep and Respiratory Care, Philips Healthcare, Monroeville, PA, United States.

