

# Measuring the quality and quantity of sleep at home

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Difficulty falling asleep, frequent waking, poor quality of sleep and a variety of sleep-related breathing problems are very common – they afflict approximately a third of the population.

"Discovering an easy way to track [sleep](#) could help improve [sleep quality](#). The current measuring methods are uncomfortable and designed mainly for medical diagnoses, so they are unsuitable for measuring sleep independently at home," explains Joonas Paalasmaa, who defended his doctoral dissertation in computer science at the University of Helsinki, Finland, on 7 February.

Paalasmaa's dissertation demonstrates a new measuring method which makes it possible to easily measure the quantity and quality of sleep in your own bed.

A flexible film sensor is placed under the bed sheets to measure the sleeper's movement, heart rate and breathing. The sensor can obtain a great deal of sleep-related information from the measurements, such as the amount of sleep, snoring, and resting heart rate at night. This information is displayed to the user through an online service or mobile device.

The benefit of the measuring system is that the heart rate and breathing data can be measured even though the sensor is not in direct contact with the sleeper's body. The new signal processing methods can detect [heart rate](#) and breathing from the signals, as different forms of interference

are accounted for in the algorithm.

The sleep measuring system already has a practical application, and the product is available on the market. In its commercial form, the sensor sends its measured data wirelessly to a mobile device which then displays the information to the user. A mobile app then provides instructions for improving sleep, based on the measurements and the user's profile.

Provided by University of Helsinki

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