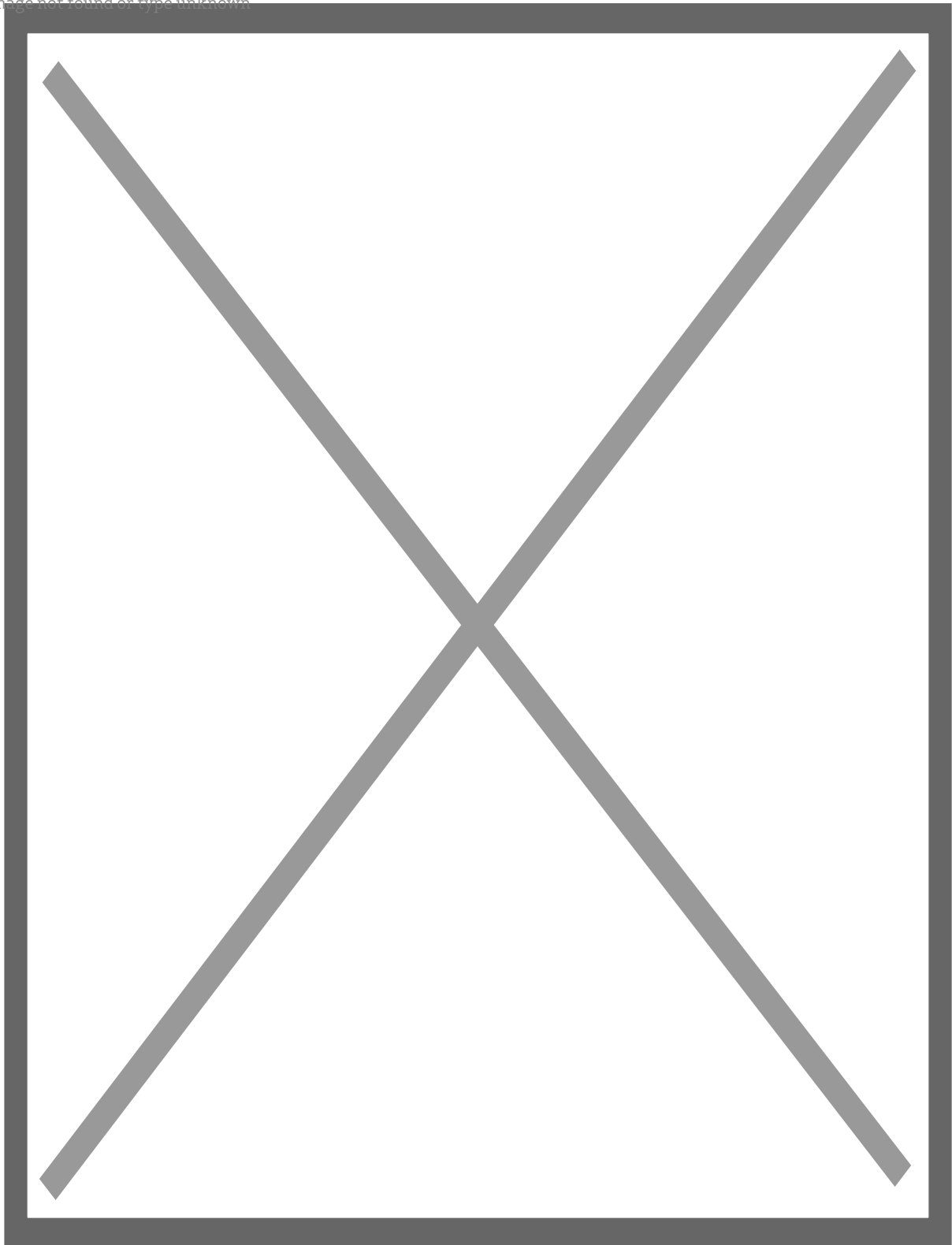


# New methods for the assessment of reactions to noise during sleep



Sleep is much more diverse than most people are aware: during the night, we go through various phases of sleep. Dreams and dreamless phases alternate. Sleep research can measure all these various phases. Polysomnography is regarded as the “gold standard” method here: with the aid of several electrodes attached to the head and upper body of a sleeping person, it is possible to determine precisely which sleep phases the sleeper has reached and when. The method has many advantages – but also a decisive disadvantage for many research projects: it is very complicated. This is why sleep studies often have to make do with very low numbers of study subjects.

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In order to overcome this obstacle, the NORAH team developed a simpler method in collaboration with US scientists from the University of Pennsylvania which could also be used in the future to analyze noiseimpaired sleep – this will, however, require further research. The so-called



“vegetative-motor” method requires just two electrodes. The method measures the nocturnal heart frequency and the body movements of sleepers. The U researchers already used the method in 2014/2015, after the NORAH measurements, in a study at the airport in Philadelphia. Further US airports are to follow.

## Reactions to aviation noise even during sleep

Scientists cannot draw the same conclusions from the measurement results of the “vegetative-motor” method as from the results of a polysomnographic analysis. It is not possible to tell, for example, which sleep phase a person is in. The measurement results are nonetheless very valuable for NORAH: they show that sleepers react physically to noises, for example aviation noise – with accelerated heartbeat and increased body movements. For many overflights the scientists were able to determine in a comparison of the polysomnographic and the “vegetative-motor” measurement data that, although the sleepers did not wake up, they still reacted physically. Whether these nocturnal reactions have consequences for health will have to be the subject of future studies. The NORAH team regards it as possible, however, that the regularly accelerated heartbeat could, in the long term, increase the risk for cardiovascular disease.

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## Do you have any questions?

Icon Kontakt Lärmstudie

Get in touch with us

Gemeinnützige Umwelthaus GmbH

Rüsselsheimer Str. 100

65451 Kelsterbach

Germany

Tel. +49 6107 98868-0

Fax +49 6107 98868-19

[norah@umwelthaus.org](mailto:norah@umwelthaus.org)