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My name is Svenja Meyhöfer, I am a medical doctor and researcher at the University of Lübeck, at the Institute for Endocrinology & Diabetes. My research focuses on complications associated with diabetes and obesity.

In the presented study, we found that sleep is metabolically relevant and sleep deprivation prevents counterregulatory adaptation to recurrent hypoglycaemia.

We used recurrent hypoglycaemia as a model of metabolic learning since recurrent hypoglycaemia leads to an adaptation of the neuroendocrine counterregulatory response during subsequent hypoglycaemia. This phenomenon is also known in everyday clinical practice as ‘hypoglycaemia unawareness syndrome’. On the background of sleep as an established mechanism for consolidation of memory content, sleep loss after repeated hypoglycaemia should prevent the consolidation of a dampened counterregulatory response to further hypoglycaemia.

Therefore, we performed a clinical study in a randomised, balanced, cross-over design in healthy men with two experimental conditions: during both conditions two consecutive hyperinsulinaemic-hypoglycaemic clamps were performed to induce adaptation of counterregulatory response, followed by a third hypoglycaemia on the subsequent day. During the night between the second and third hypoglycaemia, participants were allowed to sleep or had to stay awake, respectively. As expected the counterregulatory response to the third hypoglycaemic clamp was distinctly dampened after a night with regular sleep. In contrast, sleep deprivation preserved the counterregulatory response to recurrent hypoglycaemia for the key counterregulatory hormones adrenaline, growth hormone, and glucagon. In line with the hormonal data, also hypoglycaemia awareness was preserved after sleep loss as most pronounced for neuroglycopenic symptoms.

Sleep might be a prerequisite for counterregulatory failure in recurrent hypoglycaemia. Although complete sleep loss might not be a general tool to prevent hypoglycaemia unawareness in clinical practice, these data call for further investigations into the role of sleep-related memory formation in chronic hypoglycaemia unawareness.

## WINNER PORTRAIT

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We were able to publish these data in the journal “Diabetologia”. It was chosen as the ‘editor’s choice’ article of the month by the journal. In addition, the journal interviewed me about this study, which appeared on the front page of the journal’s homepage. It was a great honour for me to present these data as an oral presentation at the conference of the American Diabetes Association 2022 in New Orleans, USA.

I thank the DZD for the support and I am very happy to be chosen for the DZD Award 2022.