Website address:
https://www.gesundheitsindustrie-bw.de/en/article/press-release/no-soft-drink-massage

No soft drink before the massage

How does sugar affect relaxation exercises? A new study carried out by researchers from the University of Konstanz provides revealing insights into the connection between blood glucose and the autonomic nervous system: The intake of sugar counteracts relaxation.

A bit of sugar before a class test, a piece of chocolate before an important negotiation, a muesli bar before a marathon – the important role glucose plays in coping with stressful situations has been well researched. When we consume sugar, the body reacts more strongly to stress by releasing more cortisol. In addition, our heart rate remains elevated for longer. This means that more energy is available in acute stressful situations. The negative long-term consequences are also well known: increased risk of high blood pressure, obesity and cardiovascular disease.

What has been less well researched to date is how sugar intake affects relaxation. This is why researchers in the team of Jens Pruessner, professor of neuropsychology at the University of Konstanz, conducted a corresponding study, which has now been published in the *International Journal of Psychophysiology.* Jens Pruessner summarizes the study results: "If your stomach is full, relaxation exercises will not be as effective".

The Konstanz research team aims at understanding what role the body's energy systems play in relaxation and what effect individual metabolic factors have – for example blood glucose levels. The autonomic nervous system, which includes the sympathetic and parasympathetic nervous systems, controls various processes in our organism, such as heart rate and breathing. "Our heart has an internal pacemaker that determines how fast it beats. While sympathetic activity has a stimulating and activating effect in moments of stress, parasympathetic activity works like a vagal brake, slowing down the heartbeat", explains Maria Meier, first author of the study and postdoctoral researcher in Jens Pruessner's research team.

Sweet relaxation?

The study involved 94 healthy adults. The participants who had fasted before coming to the laboratory, were randomly allocated to consume either a drink containing glucose or water. One half then received a relaxing massage, while the other half rested without a direct intervention. Cardiac activity was measured continuously. The authors later calculated heart rate variability, a measure of the parasympathetic nervous system's activity. They also assessed the pre-ejection period, which is a measure of the activity of the sympathetic nervous system.

What effect did sugar have in this experiment? All participants stated that they had found the massage or the resting phase mentally relaxing. This was also reflected in the measured cardiac activity: The relaxation techniques activated the parasympathetic nervous system, regardless of whether sugar had been consumed beforehand or not. That massages provide deeper relaxation compared to simply resting had already been shown in previous studies.

At the same time, the sympathetic nervous system was activated after sugar intake. "This means: Although the participants subjectively felt relaxed, their sympathetic nervous system did not slow down, but kept the body in a higher state of arousal. As a conclusion from our test results we can say that sugar impairs the body's ability to relax", says neuropsychologist Meier.

So no soft drink, no ice cream before the massage? "Enjoying a sweet snack is often associated with relaxing situations – a chocolate bar or ice cream with a movie, a slice of cake at the weekend with the family. In fact, the constant sympathetic activation after sugar intake seems to limit the ability to relax. So, if you want to explicitly relax, e.g. through meditation or progressive muscle relaxation, you should not eat something high in sugar beforehand", explains Jens Pruessner.

The study also leads to another conclusion for the researchers: "To make valid statements, we can't just look at one system in isolation – that is, either the sympathetic or the parasympathetic system – because otherwise we would overlook some effects", says Maria Meier. "If we had only investigated the parasympathetic nervous system, we would not have observed the important effect on the sympathetic nervous system".

Original study: "The effect of glucose on cardiac reactivity to a standardized massage in healthy adults" erschienen als Open Access Artikel im International

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The study was conducted by:

- Psychologist Maria Meier, first author of the study and postdoctoral researcher in the Neuropsychology researchteam at the University of Konstanz
- Jens C. Pruessner, professor of neuropsychology at the University of Konstanz
- Stephanie J. Ashcraft, University of Konstanz and University of Montana
- Eva Unternaehrer, University of Basel
- Other members of Jens Pruessner's research team at the University of Konstanz are: Bernadette F. Denk, RaphaelaJ. Gaertner, Elea S. C. Klink, Stella Wienhold and Nina Volkmer

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Further information

- University of Konstanz