

# Drink coffee after breakfast, not before, for better metabolic control

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A strong, black coffee to wake you up after a bad night's sleep could impair control of blood sugar levels, according to a new study.

Research from the Centre for Nutrition, Exercise & Metabolism at the University of Bath (UK) looked at the effect of broken sleep and morning coffee across a range of different metabolic markers.

Writing in the *British Journal of Nutrition* the scientists show that whilst one night of poor sleep has limited impact on our metabolism, drinking coffee as a way to perk you up from a slumber can have a negative effect on blood glucose (sugar) control.

Given the importance of keeping our blood sugar levels within a safe range to reduce the risk of conditions such as diabetes and heart disease, they say these results could have 'far-reaching' [health implications](#) especially considering the global popularity of coffee.

For their study, the physiologists at the University of Bath asked 29 healthy men and women to undergo three different overnight experiments in a random order:

- In one, condition participants had a normal night's sleep and were asked to consume a [sugary drink](#) on waking in the morning.
- On another occasion, participants experienced a disrupted night's sleep (where the researchers woke them every hour for five minutes) and then upon waking were given the same sugary drink.
- On another, participants experienced the same sleep disruption (i.e. being woken throughout the night) but this time were first given a strong [black coffee](#) 30 minutes before consuming the sugary drink.

In each of these tests, blood samples from participants were taken following the glucose drink which in energy content (calories) mirrored what might typically be consumed for breakfast.

Their findings highlight that one night of disrupted sleep did not worsen participants' blood glucose/insulin responses at breakfast, when compared to a normal night's sleep. Past research suggests that losing many hours of sleep over one and/or multiple nights can have negative metabolic effects, so it is reassuring to learn that a single night of fragmented sleep (e.g. due to insomnia, noise disturbance or a new baby) does not have the same effect.

However, strong black coffee consumed before breakfast substantially increased the blood glucose response to breakfast by around 50%. Although population-level surveys indicate that coffee may be linked to [good health](#), past research has previously demonstrated that caffeine has the potential to cause insulin resistance. This new study therefore reveals that the common remedy of drinking coffee after a bad night's sleep may solve the problem of feeling sleepy but could create another by limiting your body's ability to tolerate the sugar in your breakfast.

Professor James Betts, Co-Director of the Centre for Nutrition, Exercise and Metabolism at the University of Bath who oversaw the work, explains: "We know that nearly half of us will wake in the morning and, before doing anything else, drink coffee—intuitively the more tired we feel, the stronger the coffee. This study is important and has far-reaching health implications as up until now we have had limited knowledge about what this is doing to our bodies, in particular for our metabolic and blood sugar control.

"Put simply, our blood sugar control is impaired when the first thing our bodies come into contact with is coffee especially after a night of disrupted sleep. We might improve this by eating first and then drinking coffee later if we feel we still need it. Knowing this can have important health benefits for us all."

Lead researcher, Harry Smith from the Department for Health at Bath

added: "These results show that one night of disrupted sleep alone did not worsen participants' [blood](#) glucose/insulin response to the sugary drink compared to a normal night of sleep which will be reassuring to many of us. However, starting a day after a poor night's sleep with a strong coffee did have a [negative effect](#) on glucose metabolism by around 50%.

"As such, individuals should try to balance the potential stimulating benefits of caffeinated coffee in the morning with the potential for higher [blood glucose](#) levels and it may be better to consume coffee following breakfast rather than before.

"There is a lot more we need to learn about the effects of sleep on our metabolism, such as how much sleep disruption is necessary to impair our metabolism and what some of the longer-term implications of this are, as well as how exercise, for instance, could help to counter some of this."

This week marks International Coffee Day (1 October) in celebration of the widespread appeal of coffee around the world. Coffee is now the world's most popular drink, with around two billion cups consumed every day. In the US about half of the people in the United States aged 18 and over drink coffee every day, whilst in the UK, according to the British Coffee Association, 80% of households buy instant [coffee](#) for in-home consumption.

**More information:** Harry A. Smith et al, Glucose control upon waking is unaffected by hourly sleep fragmentation during the night, but is impaired by morning caffeinated coffee, *British Journal of Nutrition* (2020). [DOI: 10.1017/S0007114520001865](https://doi.org/10.1017/S0007114520001865)



Provided by University of Bath

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