# UK study investigates whether icy slush can protect gut health in extreme heat



A new research study at a UK university is set to explore the effects of consuming very cold beverages, specifically partially frozen water in the form of slush, on the human gut under heat stress conditions. The investigation aims to understand how heat impacts gut permeability and whether drinking something cold can mitigate these effects, particularly among vulnerable age groups.

The trial, conducted at the university’s Environmental Extremes Lab, will involve participants divided into two age categories: young adults aged 18 to 30 and older adults over 65. During the initial phase of the study, participants will walk on a treadmill in a controlled environment heated to 40°C. They will undertake two to three sets of ten-minute walking intervals, during which gases exhaled from their lungs will be collected for analysis. Subsequent sessions will require participants to walk for 115 minutes with intermittent breaks consisting of five 15-minute walking bouts separated by 10-minute rest periods.

Researchers will administer a sugary drink to all participants, collecting blood samples to examine physiological markers that highlight the effects of heat on the gut. In the second part of the trial, a subset of participants will consume an iced, water-only slush prior to the walking bouts to ascertain if the cold intake influences the body’s response to heat stress.

Neil Maxwell, leader of the Environmental Extremes Lab, explained the rationale behind the research, stating: “We know that heat can increase gut permeability, and that this effect is more pronounced in older people. But we don’t yet know how best to offset that risk. This study is testing whether a very simple strategy – drinking something cold – can actually help prevent some of the harmful effects of heat stress.”

The study also delves into the physiology of heat-related illnesses such as heatstroke and heat exhaustion. Heatstroke occurs when the body’s temperature rises dangerously high, whereas heat exhaustion results from excessive loss of water and salt through sweating. Both conditions can cause a reduction in blood flow to the intestines because the body prioritises cooling the skin. This reduction in blood flow allows liquids and gases to pass more easily through the intestinal lining, potentially letting bacteria and toxins enter the bloodstream. This phenomenon is amplified in older adults, young children, and individuals with specific health conditions.

Symptoms commonly associated with heatstroke, such as flushed skin, dizziness, headaches, nausea, and excessive sweating, are under scrutiny in this research context. The trial is scheduled to run from April to June, with researchers hoping to identify a cost-effective and readily accessible intervention to protect those most at risk during periods of extreme heat.

Gregor Eichhorn, the principal investigator and a PhD student at the university’s School of Education, Sport and Health Sciences, remarked on the broader implications of the research: “Heat illnesses are a growing concern. We hope that our findings can lead to practical solutions to prevent heat-related health issues, especially for those who are most vulnerable. This study is not just about understanding how to manage heat exposure but also about developing strategies that could be used in everyday situations to ensure people stay safe and healthy.”

The Argus is reporting that the outcomes of this study may contribute significant insights into managing heat stress and preventing heat-related illnesses through simple interventions such as cold beverage consumption, with a focus on both scientific measurement and practical application.

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://pubmed.ncbi.nlm.nih.gov/39417775/> - This study examines how heat stress increases gastrointestinal permeability in both young and older adults, highlighting the heightened risk for older individuals.
2. <https://pubmed.ncbi.nlm.nih.gov/29371075/> - This research investigates the impact of water temperature during exertional heat stress on gastrointestinal injury and systemic inflammatory responses, indicating that cold and cool water ingestion can reduce thermoregulatory strain compared to room temperature water.
3. <https://journals.physiology.org/doi/full/10.1152/japplphysiol.00787.2001> - This article discusses how hyperthermia-induced intestinal permeability and epithelial damage occur both in vivo and in vitro, suggesting that thermal disruption of epithelial membranes contributes to intestinal barrier dysfunction during heat stress.
4. <https://www.jeom.org/en/article/doi/10.11836/JEOM23131> - This review highlights the effects of heat stress on the intestinal tract and cognitive function, noting that heat stress can increase intestinal barrier permeability by damaging tight junctions, allowing endotoxins and bacteria to enter the bloodstream and cause systemic inflammation.
5. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8436972/> - This comprehensive summary focuses on mechanisms of organ failure during and after heat exposure, specifically discussing how heat stress leads to elevated intestinal permeability and the potential role of digestive enzymes in multiorgan dysfunction.
6. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10126409/> - This study investigates how cold stress induces colitis-like phenotypes in mice by altering gut microbiota and metabolites, suggesting that exposure to cold water not only disturbs gut transit but also leads to low-grade inflammation.
7. <https://www.theargus.co.uk/news/25126236.university-brighton-explore-impact-slush-drinks/?ref=rss> - Please view link - unable to able to access data