

# Blast exposure linked to intestinal problems

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A study by New York and Rocky Mountain U.S. Department of Veterans Affairs researchers showed blast exposure can cause intestinal

permeability, a condition that can lead to gut bacteria entering the bloodstream and causing problems in other parts of the body. The study, [published](#) in the *International Journal of Molecular Sciences*, was the first to show a connection between blasts and intestinal permeability in a real-world operational setting.

Researchers found biomarkers of intestinal permeability and signs of bacteria in the blood in 23 of 30 military breachers who were exposed to controlled, low-level explosive blasts during training. The biomarkers were observed between one and 16 hours after [blast exposure](#), suggesting a direct connection.

Intestinal permeability is a condition in which materials in the [gastrointestinal tract](#) can pass through the cells lining the intestinal walls. While the human body naturally has some intestinal permeability to allow nutrients to pass through the gut, when the barrier is too loose harmful substances such as bacteria can pass through into the rest of the body.

Participants also reported headache, dizziness, concentration problems, and slow thinking after blast exposure. These symptoms are often seen in people with mild traumatic brain injury (TBI). Analysis suggested bacterial leakage could add to [mild traumatic brain injury](#) to increase mental symptoms. Previous research has shown a connection between gut [bacteria](#) and cognitive performance.

About 20% of post-9/11 active duty Service members and Veterans have reported at least one mild TBI, with more than a third of these being caused by blast-related injuries. TBI research has shown pressure waves caused by explosions can cause internal injuries to the vasculature of the brain. While the entire body is susceptible to this type of damage from

blasts, less is known about how the digestive tract may be affected. To the best of the author's knowledge, this is the first study to show a direct connection between blasts and [intestinal permeability](#) with associated cognitive symptoms.

The authors suggest treatment of blast-related TBI should also take into consideration intestinal integrity, the [gut microbiota](#), and bacterial effects such as systemic inflammation.

**More information:** Qingkun Liu et al, Association of Blast Exposure in Military Breaching with Intestinal Permeability Blood Biomarkers Associated with Leaky Gut, *International Journal of Molecular Sciences* (2024). [DOI: 10.3390/ijms25063549](https://doi.org/10.3390/ijms25063549)

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