

Aerobic fitness may protect liver against chronic alcohol use

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Credit: Justin Kelley, University of Missouri Health

According to the Centers for Disease Control and Prevention, excessive alcohol use is responsible for more than 80,000 deaths in the United

States each year. Over time, excessive drinking can lead to several chronic conditions, such as fatty liver disease and cirrhosis. Now, a study by University of Missouri School of Medicine researchers shows that aerobic exercise may protect the liver against alcohol-related inflammation and injury.

"Excessive alcohol consumption is one of the most common causes of [chronic liver failure](#)," said Jamal Ibdah, M.D., Ph.D., professor of medicine, Raymond E. and Vaona H. Peck Chair in Cancer Research at the MU School of Medicine and lead author of the study. "We know from previous research that chronic and binge drinking causes modifications to protein structures within the liver, resulting in irreversible damage. In our current study we wanted to see whether increased levels of [aerobic fitness](#) could prevent alcohol-related liver damage."

Ibdah's research team used rats bred for high activity, or "runner rats," to test if increased metabolism protected the liver against fatty deposits and inflammation. One group of rats was exposed to chronic alcohol use for six weeks and compared to a second group that was not exposed to alcohol during the same time period.

"As expected, we found that [fatty deposits](#) were greater in the livers of the chronic alcohol group," said Ibdah, who also serves as director of the Division of Gastroenterology and Hepatology at the MU School of Medicine. "However, chronic alcohol ingestion did not cause significant inflammation in the liver. Higher physical activity levels seemed to protect against the metabolic dysfunction that eventually leads to irreversible liver damage."

Ibdah's team also found that chronic alcohol ingestion caused no discernable increase in free fatty acids, triglycerides, insulin or glucose in the blood of the group exposed to alcohol as compared to the control

group.

"This is significant because chronic alcohol ingestion may reduce insulin effectiveness over time, leading to elevated blood insulin and sugar levels," Ibdah said. "With chronic use, we would expect to see these levels much higher than the control group, yet surprisingly, they were about the same."

Ibdah said more research is needed to better understand how increased aerobic fitness provides oxidative protection against chronic alcohol use. However, understanding this mechanism may lead to eventual treatments for chronic alcohol-related liver damage.

Provided by University of Missouri-Columbia

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