



Too Much Sitting Linked to Liver Fat in People With HIV

Inadequate physical activity was associated with liver steatosis regardless of body mass index.

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Not getting enough physical activity increases the risk of fatty liver disease in people living with HIV, according to study results published in the [Journal of Acquired Immunodeficiency Syndromes](#). In particular, more time spent sitting upped the risk of liver fat accumulation.

“Insufficient physical activity and prolonged sitting time were associated with liver steatosis among people with HIV, independent of body mass index,” Carlotta Riebensahm, MD, of Bern University Hospital in Switzerland, and colleagues concluded. “Our results support the importance of promoting physical activity to prevent liver steatosis in people with HIV.”

People living with HIV are prone to comorbidities as they age, many of which are associated with low physical activity and overweight or obesity. The accumulation of visceral fat within the abdomen—reflected in an expanding waistline—is especially detrimental to health.

Liver steatosis refers to the accumulation of fat in the liver. [Metabolic dysfunction-associated steatotic liver disease \(MASLD\)](#), previously known as non-alcoholic fatty liver disease (NAFLD), is often associated with obesity, type 2 diabetes and other metabolic abnormalities. In people with HIV, steatosis can be a side effect of certain older antiretrovirals. Over time, the buildup of fat in the liver can lead to fibrosis, [cirrhosis](#) and [liver cancer](#).

With no approved medical treatment, fatty liver disease management relies on lifestyle changes such as weight loss and exercise. Physical activity is known to affect the storage of fat in the liver in the general population. The pathogenesis of metabolic complications in people with HIV is not fully understood, but HIV-positive people tend to develop steatosis at a lower body mass index (BMI), according to the study authors.

Riebensahm’s team looked at the association between physical activity and liver steatosis among 466 people receiving care at a single site of the Swiss HIV Cohort Study. Nearly three quarters were men, most were white and the median age was 52. Almost all were on antiretroviral treatment, and the median CD4 count exceeded 700. People with current or prior hepatitis B or C and pregnant women were excluded.

About half met the criteria for overweight with a BMI ≥ 25 . Just under a third met the European Association for the Study of the Liver's physical activity recommendation of 200 minutes of moderate-intensity activity or 75 minutes of vigorous activity per week. ([U.S. physical activity recommendations are similar](#), but the moderate activity threshold is 150 minutes.) People who did not meet the recommendation were more likely to be overweight and have diabetes, high blood pressure, abnormal blood lipids and a history of cardiovascular disease.

Between November 2019 and March 2023, the participants were screened with transient elastography, a noninvasive imaging method used to estimate liver fibrosis and steatosis. They completed a questionnaire about their moderate and vigorous physical activity over the past week and the amount of time they spent walking and sitting on typical weekdays.

Overall, half of the participants had at least moderate liver steatosis, and a third had severe steatosis. Even among lean individuals with a BMI < 25 , nearly a third had steatosis. Among people with steatosis, 4% had moderate or advanced liver fibrosis and 2% had cirrhosis. People who did not meet the physical activity recommendation had a significantly higher prevalence of steatosis compared with those who did (56% versus 34%, respectively). After controlling for other factors, people with physical activity below the recommended level were more than twice as likely to have steatosis. Older age (50 or older), white race, overweight, diabetes and [use of tenofovir alafenamide](#) were also risk factors for steatosis.

The researchers saw a similar association using metabolic equivalent of task minutes (METs) per week, a measure of energy expenditure. The risk of steatosis went down by 24% for each additional 5,000 METs per weeks. People who spent more time sitting also had a greater likelihood of steatosis, with the risk rising by 16% per additional hour of daily sitting time. What's more, these associations held when looking only at the subset of lean participants.

Only a small number of participants had significant fibrosis or cirrhosis, so the researchers could not determine the association between physical activity and advanced liver steatosis or metabolic dysfunction-associated steatohepatitis (MASH), formerly known as non-alcoholic steatohepatitis (NASH).

"[W]e show that decreased physical activity and prolonged sitting time are associated with liver steatosis among people with HIV, independent of BMI," the study authors wrote. "These observations highlight the beneficial effect of physical activity and highlight the importance of incorporating counseling on physical activity in the management and prevention of liver steatosis."

"In line with previous studies in the general population, we showed a significant dose-response effect of physical activity measured by [METs per week] on the risk of liver steatosis," they noted. "This finding is especially relevant for participants who cannot reach the recommended amount of physical activity and indicates that increasing time spent walking or in lower-intensity physical activity may also be beneficial."

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