Fatty Liver Disease Tied to Reduced Capacity for Exertion in Adolescents

This connection may be attributable to lower iron levels.

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Among adolescents, non-alcoholic fatty liver disease (NAFLD) is associated with lower cardiorespiratory fitness, independent of body mass index (BMI). This association may be mediated by deficient iron levels, the authors of a new study suggested.

As described in Clinical Gastroenterology and Hepatology, the researchers analyzed data regarding 390 girls and 458 boys participating in the Raine Study in Australia and determined their NAFLD status when they were 17 years old.

NAFLD and its more severe form, non-alcoholic steatohepatitis (NASH), are often associated with obesity and metabolic syndrome. Over time, fat buildup in the liver can lead to cirrhosis and liver cancer.

Fourteen percent of the young people had fatty liver disease. This group, compared with the others, had a lower capacity for maximum physical exertion, known as physical work capacity.

Among those with NAFLD, the bioavailability of iron in their body had an inverse relationship with their BMI—those with higher weight had lower bioavailability of the vital mineral. There was no such association among those without fatty liver. Iron is a component of hemoglobin, which enables red blood cells to carry oxygen.

The average volume of the participants' red blood cells and the average concentration of hemoglobin in these cells were associated with the participants' work capacity, independent of their NAFLD status.

After adjusting the data for sex, the researchers found that lower physical work capacity was associated with a lower bioavailability of iron in people with NAFLD but not in those without the liver condition. This finding was independent of the concentration of hemoglobin in their red blood cells.

"The relationship between [iron bioavailability] and [physical work capacity] in adolescents with NAFLD indicates that functional iron deficiency might contribute to reductions in cardiorespiratory

fitness," the study authors concluded.

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