

PHYSICAL ACTIVITY, GUT MICROBIOTA, SERUM METABOLITES, AND THE RISK OF STEATOTIC LIVER DISEASE IN A COMMUNITY-BASED COHORT STUDY

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UEG Week Berlin 2025

Poster

Hepatobiliary

October 7, 2025

In a prospective Chinese cohort of 2,942 adults, moderate-to-vigorous physical activity was inversely associated with steatotic liver disease risk, while sedentary behavior increased risk, with changes in gut microbiota and serum L-Valine identified as potential mediators.

KEY POINTS

- Over 5 years, 565 new SLD cases were diagnosed; each 1-SD increase in MVPA reduced SLD risk by 9 percent (HR=0.91, 95%CI: 0.83–0.99), while each additional unit of sedentary hours increased risk by 13 percent (HR=1.13, 95%CI: 1.03–1.24).
- Participants with high MVPA and short sedentary time had 25 percent lower SLD risk (HR=0.75, 95%CI: 0.58–0.97) compared to those with low MVPA and long sedentary time.
- In a subset of 330 participants with accelerometer-measured PA and microbiome analysis, MVPA modified gut microbial diversity and composition, with 14 genera showing significant abundance changes.
- MVPA was inversely associated with serum L-Valine levels, which were positively related to SLD risk (OR=16.40, 95%CI: 2.67–111.94), suggesting a metabolic pathway linking physical activity to liver health.
- This study provides prospective evidence from a Chinese population on the joint effects of physical activity and sedentary behavior on SLD, with mechanistic insights from gut microbiome and metabolomics data.

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