

Publication

Investigating the circulating sphingolipidome response to a single high-intensity interval training session within healthy females and males in their twenties (SphingoHIIT): Protocol for a randomised controlled trial.

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Introduction:: Growing scientific evidence indicates that sphingolipids predict cardiometabolic risk, independently of and beyond traditional biomarkers such as low-density lipoprotein cholesterol. To date, it remains largely unknown if and how exercise, a simple, low-cost, and patient-empowering modality to optimise cardiometabolic health, influences sphingolipid levels. The SphingoHIIT study aims to assess the response of circulating sphingolipid species to a single session of high-intensity interval training (HIIT).; **Methods::** This single-centre randomised controlled trial (RCT) will last 11 days per participant and aim to include 32 young and healthy individuals aged 20-29 (50% females). Participants will be randomly allocated to the HIIT (n= 16) or control groups (physical rest, n= 16). Participants will self-sample fasted dried blood spots for three consecutive days before the intervention (HIIT versus rest) to determine baseline sphingolipid levels. Dried blood spots will also be collected at five time points (2, 15, 30, 60min, and 24h) following the intervention (HIIT versus rest). To minimise the dietary influence, participants will receive a standardised diet for four days, starting 24 hours before the first dried blood sampling. For females, interventions will be timed to fall within the early follicular phase to minimise the menstrual cycle's influence on sphingolipid levels. Finally, physical activity will be monitored for the whole study duration using a wrist accelerometer.; **Ethics and dissemination::** The Ethics Committee of North-west and Central Switzerland approved this protocol (ID 2022-00513). Findings will be disseminated in scientific journals and meetings.; **Trial Registration;** The trial was registered on www.clinicaltrials.gov (NCT05390866, <https://clinicaltrials.gov/ct2/show/NCT05390866>) on May 25, 2022.

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