

# Endurance exercise training has beneficial effects on gut microbiota composition

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According to recent research, endurance exercise training beneficially modifies gut microbiota composition. After six weeks of training,

potentially inflammation causing microbes (Proteobacteria) decreased and microbes that are linked to enhanced metabolism (Akkermansia) increased.

Even though there was no significant drop in the weight of the subjects, [exercise](#) had other beneficial [health](#) effects, says Academy of Finland research fellow Satu Pekkala from the Faculty of Sport and Health Sciences of the University of Jyväskylä.

"We found that phospholipids and cholesterol in VLDL particles decreased in response to exercise. These changes are beneficial for cardiometabolic health because VLDL transports lipids from the liver to peripheral tissues, converts into 'bad' LDL cholesterol in the circulation, and thus has detrimental cardiovascular effects."

Exercise [training](#) also decreased Vascular adhesion protein-1 activity, which can have beneficial anti-inflammatory effects especially on vasculature, though the underlying mechanisms could not be determined in this study.

Whether Akkermansia mediates the [health benefits](#) of exercise is under further investigation.

A few other cross-sectional studies have shown that microbes belonging to the Akkermansia genus are more abundant among physically active subjects than they are among inactive ones. Akkermansia has been a target of intense research recently, and some researchers believe that it may prevent obesity and diabetes.

"However, more studies are needed to prove that Akkermansia might mediate some of the health benefits of exercise," Pekkala says.

In addition to the composition of the gut microbiota, changes in their

genes, that is, in their functionality, were studied.

"The abundance of the functional genes did not change much, which was perhaps to be expected because the diet did not change during training," Pekkala points out. "If the training period had been longer, greater effects probably would have been seen."

The research team made an exercise intervention for overweight women, which was completed by 17 subjects. Over a six-week period, previously sedentary women participated in three training sessions per week with a bicycle ergometer. The training intensity was controlled with heart rate. During the study, other lifestyle factors, including diet, were not changed in order to ensure that the effects of exercise could be observed. The research was carried out as a collaboration between the Faculty of Sport and Health Sciences of the University of Jyväskylä, University of Turku and the Spanish nonprofit research and healthcare organization FISABIO.

**More information:** Eveliina Munukka et al, Six-Week Endurance Exercise Alters Gut Metagenome That Is not Reflected in Systemic Metabolism in Over-weight Women, *Frontiers in Microbiology* (2018). DOI: [10.3389/fmicb.2018.02323](https://doi.org/10.3389/fmicb.2018.02323)

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