New evidence shows regular exercise improves blood cholesterol and reduces cardiovascular disease risk

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A new analysis of six exercise intervention studies shows that regular aerobic or endurance-type exercise produced substantial beneficial changes in the cholesterol subfraction profiles of more than 1,500 study participants, according to an article published in the journal Atherosclerosis.

"This study is the largest ever to address this question and used state-of-the-art methods to assess plasma cholesterol subfractions. We showed that all participants, regardless of age, sex, and race showed improvements in their lipid profiles, which indicates that they reduced their risk for cardiovascular disease through exercise," explained Dr. James Hagberg, professor of kinesiology at the University of Maryland School of Public Health, who was part of the study team that analyzed the participants' lipoprotein subclass profiles. "In addition, and maybe even more importantly, the cholesterol subfraction profiles improved regardless of the individual's initial body mass index (BMI) or how much BMI changed with the exercise intervention."

Dr. Hagberg and colleagues also conducted one of the six studies included in the meta-analysis – the University of Maryland Gene Exercise Research Study (GERS). His study and the other five that were analyzed by a team led by Dr. Mark A. Sarzynski (University of South Carolina Arnold School of Public Health) and Dr. Claude Bouchard (LSU Pennington Biomedical Research Center) collectively provide landmark evidence of the positive impact of exercise in reducing cardiovascular disease risk.

While previous studies have found a link between regular exercise and the reduction of LDL cholesterol levels (the "bad" cholesterol) and an increase in HDL cholesterol (the "good" cholesterol), this meta-analysis investigated exercise's impact on 25 subclasses of lipoproteins using nuclear magnetic resonance (NMR) spectroscopy. It also examined the impact across a large, diverse study population. "The result is a much more nuanced understanding of how lipoproteins respond to exercise, especially in terms of increasing the average size of LDL and HDL particles, changes which cannot be detected on a standard blood lipid profile, and both of which are associated with a reduction in cardiovascular disease risk," says Dr. Hagberg.

Researchers plan future studies to explore the cellular mechanisms through which exercise impacts plasma lipid and lipoprotein levels. They are also interested in understanding better the acute (short-term) and chronic (long-term) effects of exercise and how long the benefits of exercise persist in reducing triglycerides and in increasing HDL-C levels.

More information: Mark A. Sarzynski et al. The effects of exercise on the lipoprotein subclass profile: A meta-analysis of 10 interventions, *Atherosclerosis* (2015). DOI: 10.1016/j.atherosclerosis.2015.10.018

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