Study finds decreasing physical activity in adolescence increases risk factors for cardiometabolic diseases

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The health benefits of physical activity don't concern just the older population. A study from University of Jyväskylä, UKK institute, and

the network of Finnish Sports Medicine Centers examined what happens to physical activity in the transition to adulthood and how the changes in activity are associated with cardiometabolic risk factors. For the first time, longitudinal accelerometer data from Finnish adolescents were linked to health marker information collected in clinical examination.

"We compared young people who maintained physical activity or changed their activity to those participants who sustained relatively low level of physical activity throughout adolescence," says doctoral researcher Tuula Aira from the Faculty of Sport and Health Sciences. "The results showed that the changes in physical activity are reflected in health risk factors already in adolescence."

The baseline level and magnitude of change plays a role

The study, published in the *Scandinavian Journal of Medicine & Science in Sports* revealed that highly active 15-year-olds who further increased their activity as young adults benefited from lowered blood pressure.

"Interestingly, the decline in activity resulted in different changes in risk factors which were dependent on the baseline physical activity and the magnitude of the decrease in activity," Aira says.

Adolescents who decreased their activity from a moderate to a low level encountered increases in the concentration of insulin (which is involved in blood glucose control), as well as in body mass index. In turn, those who reduced movement from a high level to an average level were observed to have an increase in fasting blood glucose and a decrease in HDL cholesterol.

In other words, increasing physical activity was followed by favorable

changes and decreasing activity by unfavorable changes in the risk factors—even at such a young age.

"The results from blood samples were, on average, within the reference values for all young people, including those with low activity," Aira says. "So, the blood test results do not give much cause for concern.

"However, the study clearly shows that physical activity is important for health already in adolescence. Considering previous research data, it is known that in the long run, lifestyle diseases such as type 2 diabetes start to emerge more commonly among inactive people."

The study adjusted the results for gender, smoking, snuff use, and dietary habits (fruit and vegetable intake). This means that the observed differences and changes in risk factors between the physical activity groups were independent of the other factors studied.

How it was investigated?

The cohort study included accelerometer and clinical examination data with blood samples from 250 adolescents at age 15 (2013–2014) and at age 19 (2017–2018). At baseline, the participants were recruited from 156 sports clubs and 100 schools in six large cities and surrounding communities from different parts of Finland.

The study is part of "Diverging paths in physical activity and sports participation from adolescence to emerging adulthood: the Health Promoting Sports Club cohort study," which has been carried out as a collaboration between the Faculty of Sport and Health Sciences (University of Jyväskylä), the UKK Institute and the network of Finnish Sports and Exercise Medicine centers.

More information: Tuula Aira et al, Longitudinal physical activity

patterns and the development of cardiometabolic risk factors during adolescence, *Scandinavian Journal of Medicine & Science in Sports* (2023). DOI: 10.1111/sms.14415