

Arterial stiffness raises blood pressure in adolescents via insulin resistance

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In the young population, arterial stiffness, an emerging risk factor for hypertension, indirectly raises blood pressure via an increase in insulin resistance but not via an increase in body fat, a paper published in

Frontiers in Cardiovascular Medicine concludes.

There is a global effort aimed at screening, identification, and early diagnosis of hypertension in order to prevent this "silent killer disease" and its sequelae from early life. There remain missing gaps in knowledge on pathways through which blood pressure is raised even in normal-weight populations who are physically active and have healthy lifestyle choices.

It is well known that obesity increases the risk of hypertension. Researchers have recently shown that arterial stiffness, which has been established as a causal risk factor for hypertension in adults, is also implicated in the young population. Arterial stiffness may also cause increased [insulin resistance](#) in adolescents and young adults. Unfortunately, [clinical trials](#) to lower arterial stiffness in adults have not been promising, and clinical trials in the young population are ongoing.

In the new study, researchers examined whether arterial stiffness raises blood pressure via increased body fat or insulin resistance in a largely normal-weight adolescent population. This is because clinical trials in the young population have shown that lifestyle intervention could lower body fat and insulin resistance. Therefore, should arterial stiffness indirectly raise blood pressure through any of these pathways, it could be clinically relevant to intercept that path.

"We found that arterial stiffness indirectly raised blood pressure in adolescence via the insulin resistance pathway. It is nonetheless surprising that increased [body fat](#) was not a pathway through which arterial stiffness raised blood pressure in this general population of adolescents," says Andrew Agbaje, a physician and clinical epidemiologist at the University of Eastern Finland.

"Until results from clinical trials on reducing [arterial stiffness](#) in

adolescents are available, it may be important for pediatricians and public health experts to focus on encouraging healthy lifestyle choices that lower insulin resistance thereby potentially lowering [blood pressure](#). Increasing physical activity, reducing [screen time](#), quitting smoking or vaping, reducing salt and sugar intake, increasing vegetable and fiber portion of diet, and having optimal daily sleep are healthy lifestyle choices."

More information: Andrew O. Agbaje, Mediating role of body composition and insulin resistance on the association of arterial stiffness with blood pressure among adolescents: The ALSPAC study, *Frontiers in Cardiovascular Medicine* (2022). [DOI: 10.3389/fcvm.2022.939125](https://doi.org/10.3389/fcvm.2022.939125)

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