

Study: Good physical fitness does not protect children from obesity-related low-grade inflammation

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The increased prevalence of childhood obesity has resulted in an increased incidence of sustained low-grade inflammation since

childhood. Obesity is the key factor in increasing low-grade inflammation. However, high levels of physical fitness are thought to protect against obesity-induced health impairments. A study by the University of Jyväskylä and the University of Eastern Finland found that even good physical fitness itself does not reduce low-grade inflammation in children.

The study examined the links between physical fitness indices and the risk score for low-grade inflammation in 391 primary-school children. The published research was based on the Physical Activity and Nutrition in Children (PANIC) Study conducted at the University of Eastern Finland. The study was published in the *Scandinavian Journal of Medicine & Science in Sports*.

Sustained low-grade inflammation leads to [insulin resistance](#) and arterial dysfunction and promotes the development of heart diseases. A recent study examined how physical fitness affects the incidence of low-grade inflammation.

Children with better results in fitness tests, such as sit-ups, standing long jump, and agility shuttle run, also had a lower risk score for low-grade inflammation. Aerobic fitness, on the other hand, was not associated with low-grade inflammation.

However, higher body fat percentage, body mass index, and waist-to-height ratio had a much stronger connection to a higher low-grade inflammation than any physical fitness measure. The role of physical fitness as a determinant of low-grade inflammation also weakened once body fat percentage was considered in the analyses.

"Physical fitness does not seem to be very much to do with a low-grade inflammation in childhood compared to, for example, body fat percentage or waist circumference," says Dr. Eero Haapala, Ph.D., from

the Faculty of Sport and Health Sciences at the University of Jyväskylä.

"Based on our study, [physical fitness](#) and, for example, standing long jump can be a useful indirect method to identify children at elevated risk of low-grade inflammation."

Physical fitness testing in identifying risk groups may be helpful, especially when measuring body composition or [waist circumference](#) is too sensitive or if measuring them may be considered to cause, for example, limiting eating and excessive weight monitoring.

More information: Eero A. Haapala et al, Cross-sectional associations between physical fitness and biomarkers of inflammation in children—The PANIC study, *Scandinavian Journal of Medicine & Science in Sports* (2023). [DOI: 10.1111/sms.14337](https://doi.org/10.1111/sms.14337)

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