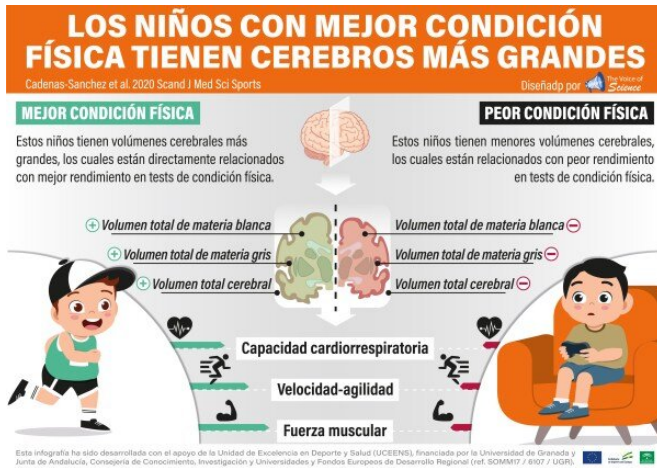


Children who are physically fitter have bigger brains, new study finds

23 March 2021, by Cristina Cadenas-Sánchez



Credit: University of Granada

Children with a higher level of physical fitness have larger brains, and both aerobic capacity and strength/speed are related to the amount of gray and white matter in the brain, meaning that overweight or obese children are adversely affected. Furthermore, a greater amount of white matter in the brain is linked to superior cognitive performance.

These are the findings derived by a team of researchers from the University of Granada (UGR)—the Department of Physical Education and Sports (Faculty of Sport Sciences), the Sport and Health University Research Institute (iMUDS), and the Mind, Brain and Behavior Research Center (CIMCYC). The team is leading the ActiveBrains project, in which more than 100 overweight or obese [children](#) have participated to date.

This study, published in the *Scandinavian Journal of Medicine & Science in Sports*, revealed that children who were classified as 'physically fit' had more gray matter and white matter, and, in general, larger brains than those children who

were deemed to be 'in poor shape.' Having more [white matter](#) was also found to be related to higher cognitive performance—specifically, greater cognitive flexibility and executive function.

"Our research shows the importance of being in good physical shape at an early age for better brain development in such a critical stage as childhood," explains Cristina Cadenas-Sánchez, postdoctoral researcher from the UGR's PROFITH research group and the main author of the work.

The principal investigator of the project, Francisco B. Ortega, continues: "Previous studies had shown that, during the aging process, the brain shrinks and [physical exercise](#) and keeping fit can help mitigate this physiological process. Our study shows, for the first time, that in childhood, when the brain is growing and developing, maintaining good levels of physical [fitness](#) is linked to greater overall brain development. These findings have important implications: 1) assessing children's fitness levels at school not only provides information about their level of physical health, as previous studies have already shown, but also about brain health; and 2) the results open the pathway to further research into how increasing children's level of physical fitness via exercise programs can benefit [brain](#) development and cognition."

More information: Cristina Cadenas-Sánchez et al. Do fitter kids have bigger brains?, *Scandinavian Journal of Medicine & Science in Sports* (2020). DOI: [10.1111/sms.13824](https://doi.org/10.1111/sms.13824) ActiveBrains project website: profith.ugr.es/activebrains

Provided by University of Granada

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