

## People who participate in sports have better attention span than those in poor physical health, study finds

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One of the participants in the University of Granada study, part of the high-level physical activity group.

New scientific evidence seems to confirm the famous Roman saying "Mens sana in corpore sano". Researchers from the University of Granada have

**demonstrated that people who normally practice sport have a better cognitive performance than those with poor physical health. More specifically, the results of this research indicate that the former have a better sustained attention span (they react more rapidly to an external stimulus introduced randomly while carrying out a monotonous task). Their autonomic nervous system also appears to work better when dealing with cognitive loads over a longer time period.**

In an article published in the latest edition of the renowned journal, *Plos One*, scientists compared the [cognitive performance](#) in specific tasks such as sustained attention, time-oriented attention (generating expectations of when an event will occur) and [time perception](#).

The study involved working with a test group made up of 28 young males. Of these, 14 were University of Granada students, aged from 17 to 23 and who showed a low level of physical aptitude (according to regulatory values established by the American College of [Sports Medicine](#)). The other 14 subjects were aged from 18 to 29 and had a high level of physical aptitude: 11 belonged to the Andalusian Cycling Federation for Under-23s and the other 3 were students of the Faculty of Physical Activity and Sports Activities of the University of Granada.

According to previous investigations, an improvement in vagal tone (more efficient functioning of the

autonomic [nervous system](#); greater variability in heart rate) is among the many benefits and also seems to be related to structural and functional adaptations of the [central nervous system](#) (for example, sporting activity prevents neuro-degeneration and promotes the growth of nerves and [blood capillaries](#) in zones such as the hippocampus, cortex, [cerebellum](#) and basal ganglia.

### **More rapid reaction times**

The article published by the researchers from the University of Granada has revealed that the group with good physical condition demonstrated a better cognitive performance with regards to sustained attention when compared with the group with a more sedentary lifestyle, and also demonstrated more rapid reaction times. No difference was seen with regards to the other two cognitive tasks.

Without doubt, one of the most interesting results of this study is how the three cognitive tasks affected the working of the [autonomic nervous system](#) in different ways (measured through changes in heart rate variability). Temporary perception had the greatest effect on the variability of heart rate (greater reduction), while sustained perception was the task that had least effect on this autonomic indicator. Furthermore, the data showed a general decrease in the variability of heart rate as time passed following the activities, uniquely affecting the group of sedentary participants.

"It is important therefore to highlight that both the physiological and behavioural results obtained through our study suggest that the main benefit resulting from the good physical condition of the cyclists who participated in the study, appeared to be associated with the processes implicated by sustained attention," explains Antonio Luque Casado of the Department of Experimental Psychology of the University of Granada, the principal author of the study.

Nevertheless, the investigators warn that this is a preliminary study, "and future investigations are necessary in order to confirm these initial findings." With this objective, the University of Granada scientists are currently evaluating different population groups with a view to incorporating electrophysiological recording techniques and more powerful techniques of analysis such as ECG (electroencephalogram) in the future.

**More information:** Luque-Casado, A. et al. Cognitive Performance and Heart Rate Variability: The Influence of Fitness Level, *Plos One*. [www.plosone.org/doi/10.1371/journal.pone.0056935](http://www.plosone.org/doi/10.1371/journal.pone.0056935)

Provided by University of Granada

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