

A 10-minute run can boost brain processing

December 6 2021



Credit: AI-generated image ([disclaimer](#))

Running may be a useful activity to undertake for better mental health. University of Tsukuba researchers have found that only 10 minutes of moderate-intensity running increases local blood flow to the various loci in the bilateral prefrontal cortex—the part of the brain that plays an important role in controlling mood and executive functions. These findings may contribute to the development of a wider range of treatment recommendations to benefit mental health.

There's clear evidence that physical activity has many benefits, such as the ability to improve mood, but in previous studies, cycling was often the form of exercise studied. Running, however, has always played an important role in the well-being of humans. The unique form and efficiency of human running, which includes the ability to sustain this form of exertion (i.e., by jogging as opposed to sprinting), and the evolutionary success of humans are closely linked.

Despite this fact, researchers had not yet looked closely at the effects of running on [brain regions](#) that control mood and [executive functions](#). "Given the extent of executive control required in coordinating balance, movement, and propulsion during running, it is logical that there would be increased neuronal activation in the [prefrontal cortex](#) and that other functions in this region would benefit from this increase in brain resources," explains Professor Hideaki Soya.

To test their hypothesis, the research team used the well-established Stroop Color-Word Test and captured data on hemodynamic changes associated with brain activity while participants were engaged in each [task](#). For example, in one task, incongruent information was shown, i.e., the word "red" written in green, and the participant must name the color rather than read out the word. To do so, the [brain](#) must process both sets of information and inhibit the extraneous information. The Stroop interference effect was quantified by the difference in response times for this task and those for a simpler version of the task—stating the names of color swatches.

The results demonstrated that, after 10 minutes of moderate-intensity running, there was a significant reduction in Stroop interference effect time. Furthermore, bilateral prefrontal activation had significantly increased during the Stroop task. After running, participants reported being in a better mood. "This was supported by findings of coincident activations in the prefrontal cortical regions involved in [mood](#)

regulation," first author Chorphaka Damrongthai adds.

Given that many characteristics of the human prefrontal cortex are uniquely human, this study not only sheds light on the present benefits of running but also on the possible role that these benefits may have played in the evolutionary past of humans.

More information: Chorphaka Damrongthai et al, Benefit of human moderate running boosting mood and executive function coinciding with bilateral prefrontal activation, *Scientific Reports* (2021). [DOI: 10.1038/s41598-021-01654-z](https://doi.org/10.1038/s41598-021-01654-z)

Provided by University of Tsukuba

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