

A strong coffee half an hour before exercising increases fat-burning

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The scientists have demonstrated that consuming caffeine (about 3 mg/kg or the equivalent of a strong coffee) half an hour before aerobic exercise significantly increases fat-burning. Credit: University of Granada

Scientists from the Department of Physiology of the University of Granada (UGR) have shown that caffeine (about 3 mg/kg, the equivalent of a strong coffee) ingested half an hour before aerobic exercise significantly increases the rate of fat-burning. They also found that if the exercise is performed in the afternoon, the effects of the caffeine are more marked than in the morning.

In their study, published in the *Journal of the International Society of Sports Nutrition*, the researchers aimed to determine whether [caffeine](#)—one of the most commonly consumed ergogenic substances in the world to improve sports performance—actually does increase [oxidation](#) or "burning" of fat during exercise. Despite the fact that its consumption in the form of supplements is very common, the [scientific evidence](#) for its beneficial claims is scarce.

"The recommendation to exercise on an empty stomach in the morning to increase fat oxidation is

commonplace. However, this recommendation may be lacking a scientific basis, as it is unknown whether this increase is due to exercising in the morning or due to going without food for a longer period of time," explains the lead author of this research, Francisco José Amaro-Gahete of the UGR's Department of Physiology.

A total of 15 men (mean age, 32) participated in the research, completing an [exercise test](#) four times at seven-day intervals. Subjects ingested 3 mg/kg of caffeine or a placebo at 8am and 5pm (each subject completed the tests in all four conditions in a random order). The conditions prior to each exercise test (hours elapsed since last meal, physical exercise, or consumption of stimulant substances) were strictly standardized, and fat oxidation during exercise was calculated accordingly.

Maximum fat oxidation

"The results of our study showed that acute caffeine ingestion 30 minutes before performing an [aerobic exercise](#) test increased maximum fat oxidation during exercise regardless of the time of day," explains Francisco J. Amaro. The existence of a diurnal variation in fat oxidation during exercise was confirmed, the values being higher in the afternoon than in the morning for equal hours of fasting.

These results also show that caffeine increases fat oxidation during morning exercise in a similar way to that observed without caffeine intake in the afternoon.

In summary, the findings of this study suggest that the combination of acute caffeine intake and aerobic [exercise](#) performed at moderate intensity in the afternoon provides the optimal scenario for people seeking to increase fat-burning during [physical exercise](#).

More information: Mauricio Ramírez-Maldonado et al, Caffeine increases maximal fat oxidation during a graded exercise test: is there a diurnal variation?, *Journal of the International Society of Sports Nutrition* (2021). DOI: [10.1186/s12970-020-00400-6](https://doi.org/10.1186/s12970-020-00400-6)

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