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Blueberry power: Eat your way to a better workout

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Dr. Mary Ann Lila presents protein powders that have been infused with health-promoting compounds from fresh produce like blueberries. These powders can be used as food products.

Drop and give me 20. But don't forget to eat your blueberries before and after you complete those push-ups.

It turns out that that the fruit, already renowned for its extraordinary health properties, also delivers greater polyphenol absorption and fat-burning benefits during and after exercise.

Blueberries have high concentrations of polyphenols, a class of bioactive compounds in fruits and vegetables that help lower blood pressure and blood glucose, reduce inflammation, and fight off the damaging effects

of free radicals.

A recent NC State clinical trial published in *PLOS One* shows that exercise enhances the absorption of these polyphenols.

In the study, long-distance runners were given either a soy protein complex infused with polyphenols from blueberries and green tea, or just the protein complex. The runners ingested the complex for two weeks, and during three days of running for two-and-a-half hours each day.

"Following prolonged running, athletes experience transient inflammation, oxidative stress and immune dysfunction," explains Dr. David Nieman, director of the Appalachian State University Human Performance Lab and lead author of the study. "Metabolomics, a new technology, showed that the intense exercise increased gut permeability, promoting the transfer of phenolics into the body in much higher amounts than before the exercise."

An equally significant finding was that the runners in the treatment group demonstrated a longer spike in their metabolism after exercise.

"Burn fat while you sleep is a great message," said Dr. Mary Ann Lila, director of NC State University's Plants for Human Health Institute. "We showed that metabolism is stimulated by exercise, but we also saw fatty acid oxidation and ketogenesis with more ketones at 14 hours post-exercise in the treatment group. The placebo group went back to normal levels."

Ketogenesis is the production of biochemicals called ketones that result from the breakdown of fatty acids in the liver, which in turn provides energy to the body, especially the heart and brain.

"The findings reinforce the potential benefits of consuming fruits and vegetables, and in particular blueberries, before and after exercise," Lila said.

More information: www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0072215

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