Beets, the bright red root vegetable you probably hated as a kid, and cash crop of Dwight Schrute from television’s famed comedy, The Office, have become quite popular among athletes and fitness enthusiasts looking for an “edge up” when they work out and on competition day.

Beets, among other vegetables, like arugula, celery, lettuce, kale, spinach, collards, Swiss chard and bok choy are good sources of naturally occurring nitrate. Once eaten, nitrate is reduced in our bodies to nitrite, nitric oxide, and other metabolites. It is the boost of nitric oxide that’s likely responsible for the potential improvement in athletic performance. Nitric oxide easily enters body tissues, signaling blood vessels to dilate (widen, relax), allowing increased blood flow, which in turn, allows more oxygen to reach your muscles.

A large review study published in 2014 showed that nitrate from foods have the potential to lower blood pressure, lessen the amount of oxygen that muscles need during exercise, and, in some cases, improve athletic performance. Some studies on dietary nitrate showed that subjects were able to exercise longer (further distance running, rowing, cycling) until reaching exhaustion. Other studies showed subjects were able to complete the same distance (cycling, running) but faster. And at least one study showed that subjects perceived less exertion after consuming nitrate-rich baked beets than after a placebo.

What isn’t as clear just yet, is the ideal amount you should take to optimize these benefits. In addition, beneficial results appear to be affected by the age, diet, health and fitness level of the subjects, as well as the intensity, duration and nature of the exercise being performed.

Research suggests that 300-500 mg of nitrates/day is needed to improve athletic performance. This amount can be consumed by a diet rich in nitrate-rich vegetables or in the more concentrated form of beet juice (sometimes called “beet root juice”). For example:
1 cup of raw spinach: about 900 mg nitrate
1/2 cup cooked collard greens: about 200 mg nitrate
1 cup raw leaf lettuce: about 100 mg nitrate
1 cup beet juice (regular strength): about 200 mg nitrate
1 Beet It Sport Shot* (2.4 oz): 400 mg nitrate (concentrated beet juice product marketed to athletes; available at Sprouts, Amazon.com)

Note: nitrate concentration in vegetables varies across the country; thunderstorms/lightning, humidity, can all affect how much nitrate is in the vegetables.

The amount of beet juice consumed in the studies that demonstrated positive effects ranged from 140 mL – 500 mL (about ½ - 2 cups) per day, for several days (3-6, up to 15 days) before an athletic event. Consumption of nitrates for fewer than 3 days showed less consistent advantageous results.
Generally speaking, recreational athletes showed more performance enhancement than elite athletes. In addition, the biggest improvements were seen in exercise bouts lasting five and thirty minutes.

It’s important to note that not every single study showed an improvement in athletic performance with increased nitrate/beet consumption; but many did. And since vegetables that are high in nitrates are healthy in general, and toxicity (see “notes of caution, next paragraph) generally is not a concern, an extra shot or two of beet root juice or an extra helping of nitrate-rich vegetables when consumed consistently, appears to be a safe and healthy way to attempt to obtain “a little something extra” as far as your exercise goes.

A few notes of caution: an increase in beet or beet juice consumption can cause your urine and feces to have a reddish tint – this is not blood and completely normal (and harmless). Because beets are high in oxalate, those that are prone to kidney stones (specifically calcium oxalate stones) should use caution when increasing beet/beet juice. And finally, a dramatic increase in beet/beet juice consumption may interact with certain blood pressure medications, so discuss this with your doctor.

For more information about how nutrition affects sports performance or any other nutrition-related matter, be sure to set up a nutrition assessment with Campus Recreation’s registered dietitian nutritionist, Annie Bell. Appointments are individualized to address your needs, questions, and concerns and last about an hour – oh, and they’re free! Full instructions on how to register for your appointment are here: https://campusrec.utsa.edu/nutritionregistration

Sources:
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4008816/
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4245587/