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Written by Ann Gerhardt, MD

Healthy Pulses
By Ann Gerhardt MD February 2026

There are two kinds of health-related pulse. One is the pulse we normally relate to the body, i.e., the impact felt from a surge of arterial blood that occurs from the heart's left ventricle contracting, pushing blood into circulation. Counting the radial (at the soft spot at the base of the thumb) or carotid (below the jaw) pulse for one minute gives the heart rate, which is normally between sixty and one hundred. Well aerobically conditioned athletes tend to build heart muscle, so that each pump pushes out more blood. Because this stronger heart doesn't need to pump as quickly to provide sufficient blood to maintain brain and body function, these athletes may have low heart rates, between 40 and 60, at rest. Others, who are not well-conditioned, may feel lightheaded with slow heart rates, indicating that the brain is not receiving a healthy amount of blood. In those people, a slow rate indicates heart pathology. Similarly, rapid heart rates may reflect heart problems. The pulse normally rises with exercise, to up to 50-75 percent more than the resting rate, to deliver more blood to working muscles. Heart rate may also normally rise in response to stimulation of the nervous system in response to panic, anger or anxiety. When the rate rises precipitously, often with a feeling of chest fluttering (palpitations), the ventricle may not have time to refill with blood before the next beat, delivering less blood to the brain and causing symptoms of lightheadedness, sweating and weakness. Some drugs and medications, like cocaine, methamphetamines, decongestants, asthma medications and a few antibiotics (Zithromax, the floxacins and amoxicillin) may raise heart rate. In other people, cardiac electrical abnormalities may produce rapid heart rates in the absence of exercise, stimulant drugs, anxiety or stress response and should be evaluated by a doctor.

The other pulses are foods, the kernels or dried seeds of legumes, including chickpeas, peanuts, lentils, peas, soybeans, and adzuki, mung, black, pinto, navy, lupin and kidney beans. A plant pod is a legume and the pea or bean inside is the pulse. Pulses contain varying amounts of protein, fiber, iron, phosphorus, folate and unsaturated fatty acids, but very little, bordering on zero, absorbable sugar or carbohydrate. Pulses are great filler foods for diabetics and pre-diabetics, since most of the sugars they contain are not absorbed by the human small intestine. Instead, the unabsorbed sugar passes into the colon where bacteria ferment it, producing gas. Hence the catchy limerick:

"Beans, beans, musical fruit,
the more you eat, the more you toot.
the more you toot, the better you feel,
so let's eat beans at every meal."

Because both their sugars and fiber are not absorbed, pulses are good fillers that don't raise blood sugar or pack on extra body weight. A patient of mine long ago was able to lose weight and stop her diabetes medication by eating pulses three times a day as her mealtime protein source. To a lesser extent, legumes/pulses naturally stimulate the body's GLP-1, at least partially obviating the need for Ozempic and other GLP-1 agonist drugs.

As plants that are easily grown, fixing nitrogen from the air to make protein, sequestering carbon in soil and releasing much less greenhouse gases than other crops, legumes sustainably benefit humans and the planet. The EAT planetary health diet published by the Lancet medical journal recommends eating about ¼ cup of legumes/pulses daily. The pre-RFK Jr. U.S. Dietary Guidelines and the DASH eating plan of the National, Heart, Lung and Blood Institute recommended eating about 2.5-3 cups a week. Though the new RFK Jr food plan emphasizes animal rather than plant protein, pulses, which provide between 7.7 and 10 grams of protein

per 100 grams of cooked pulse, ranging from lowest in lentils to highest in soybeans, make a good alternative. Iron content ranges from 5 mg/100 g peas and brown beans to 11 mg/100 g lentils. All are reasonably good sources of zinc and B vitamins, like thiamin, niacin, riboflavin and folate. All are good fiber sources, with about 11-17 g fiber per 100 g cooked pulse. They all contain moderate amounts of magnesium, potassium and phosphorus, making them prohibited by many dietitians for kidney failure patients, since high blood levels of those, particularly potassium, can be dangerous when kidneys lack the capacity to regulate them. Contrary to their advice, I employ data showing that high protein diets worsen kidney failure, asking patients with impaired kidney function to replace dense animal protein in their diets with moderate amounts of bulky, lower-protein pulses. Few patients eat so much of them that their blood mineral and potassium levels rise a lot. One of my patients has been able to avoid for years the imminent dialysis her nephrologist had predicted, just by switching from red meat to plant-based protein.