Strong bones: A sodium connection?

Twice as many blacks as whites in the United States experience high blood pressure—a finding that is generally attributed to blacks' propensity for retaining excess sodium from food (SN: 10/19/91, p. 254). A new study finds that this sodium retention begins before adulthood.

Because sodium retention leads to calcium retention, the observation offers a provocative explanation for why black girls tend to build stronger bones than their white counterparts—thereby lowering their risk of osteoporosis later in life.

To study calcium in adolescence, when girls lay down about 40 percent of their bone mass, Connie M. Weaver and Christina Palacios of Purdue University in West Lafayette, Ind., invited 12- and 13-year-olds—five black and five white—to attend one of two 3-week summer camps. As the girls played, the nutritionists recorded every milligram of sodium and calcium eaten and excreted. Calcium intake never varied, but the diet provided slight peaks in sodium intake, enabling the scientists to document later increases in sodium excretion.

"Peaks were held by the blacks for several days longer than the whites," Weaver told SCIENCE NEWS. "Not to make too much of this," she says, "it does hint at what may be true underlying racial differences for disease problems." It also suggests that a low-salt diet may be especially useful in adolescence to increase bone mass as a defense against osteoporosis later in life, she adds.

Because sodium retention usually translates into transient weight gains—but didn't in this study—her team is now designing a larger follow-up study to see if it missed something, such as sodium's excretion in sweat or incorporation into bone.

The researchers were originally interested in sodium intake as a major regulator of the calcium available to make bone. In the kidneys, sodium and calcium leave the body via the same tubules. Indeed, each sodium ion drags a calcium ion along, explains Weaver. Because the body acts to maintain a set concentration of sodium, "if you eat more of it, you'll excrete more—and drag out calcium with it, even if you need that calcium."

—J.R.