

Diabetes risk in children increases risk for weak bones

August 16 2010



Children at risk for diabetes before they reach puberty also appear to be at risk for weak bones, Medical College of Georgia researchers report. A study of 140 overweight children age 7-11 who got little regular exercise found that the 30 percent with signs of poor blood sugar regulation had 4-5 percent less bone mass, a measure of bone strength, said Dr. Norman Pollock, bone biologist at MCG's Georgia Prevention Institute. Credit: Phil Jones, Campus Photographer

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Institute.

The study is the first to suggest the association between weaker bones and [type 2 diabetes](#) risk in children. Type 2, which is becoming more common in children, is often associated with obesity and inactivity; [type 1 diabetes](#), believed to result from genes and environmental triggers, is known to be associated with poor bone health.

"This finding provides the first clue linking [childhood obesity](#) to skeletal fractures," said Pollock, first author on the study published in the *Journal of Bone and Mineral Research*. "While overweight children may have more bone mass than normal-weight kids, it may not be big or strong enough to compensate for their larger size."

It's not as simple as saying that everyone who is overweight has weak bones, he notes. It may have more to do with how fat is distributed throughout the body. For instance pre-diabetics tend to have more fat around their abdominal area, specifically visceral fat, a type of fat deep in the belly that is linked to diabetes and cardiovascular disease.

In this study, higher amounts of visceral fat were associated with lower bone mass while more body fat overall was associated with higher bone mass. "Taken together, it seems that excessive abdominal fat may play a key role linking pre-diabetes to lower bone mass," Pollock said.

The findings appear to be another wakeup call for parents about the potential lifelong consequences of an overweight childhood. And increased physical activity might be a relatively simple fix.

"Our greatest window of opportunity to enhance bone strength and ultimately reduce the risk of osteoporosis is during childhood, before the capacity to build bone diminishes," Pollock said. "One of the best things you can do for bone development and general health is exercise."

"Children have a lot of potential and a whole lot of time to make positive changes," echoed Dr. Catherine Davis, clinical health psychologist at the Georgia Prevention Institute and study co-author whose research has shown that regular physical activity reduces children's body fat and [diabetes risk](#) and even improves learning. "If you could patent exercise as a drug, somebody would be really, really rich."

Next steps include learning more about how abdominal fat impairs [bone mass](#), including looking at the activity of cells that make and destroy bone - the [bone](#) makers should be more active in children - as well as vitamin D and vitamin K metabolism.

Provided by Medical College of Georgia

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