# North Carolina football players testing pill that can give body temperature readings

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At first, it was hard for University of North Carolina football player Kendric Burney to swallow. They handed him a pill containing a battery, thermometer and radio transmitter and told him it would lodge in his intestine, where it would stick around for one to two days to measure his core body heat.

"I'm not going to lie. The thought of putting that in my stomach was just plain weird," the junior cornerback said.

But by gulping down the vitamin-sized CorTemp capsule Tuesday morning, Burney and 17 other Tar Heel football players began sweating out data that will be used later this season to help determine whether higher body temperatures increase the possibility of concussions. UNC's coaches also plan to use the data to better regulate drills during practice and during games in heat that often reaches the high 90s through the early stretch of fall games.

"That allows us to monitor as coaches, 'How long to we want to do that particular type of drill?'" coach Butch Davis said. "What's appropriate for a receiver might not be appropriate for an offensive lineman. So I think it's brilliant."

The CorTemp pill -- a white, silicone-coated capsule big enough "that it feels like you're swallowing a gummy bear," according to offensive lineman Alan Pelc -- was originally developed by NASA to measure astronauts' body temperature in space. But over the last six years, scores

of football teams -- including those at Duke, Virginia Tech, Texas, the NFL's Jacksonville Jaguars, Minnesota Vikings and Philadelphia Eagles -- have used the $40-per-pop doses to better learn how to beat the heat on the field.

It works like this: Players ingest the pills about five hours before practice; the removal of an attached magnet activates the battery. A device that looks like a remote control, held within six inches of the player, records the temperature via radio transmitter. (98.6 degrees Fahrenheit is normal, around 104 degrees is the danger zone).

What's left of the pill is expelled within 24 to 48 hours; with most of it dissolved.

"Of course you can't feel it inside you once you swallow it, I guess it's like food," said running back Shaun Draughn. "The only way I really remember it was there is when people were reaching around me with that little thing, trying to get the reading."

The information gathered Tuesday can be used immediately to adjust the length of drills and water breaks, as needed. A broader, Gatorade-funded study, which still needs to be approved by UNC's Institutional Review Board, could supplement information gathered by other teams using the pill. For six years, Kevin Guskiewicz, chair of UNC's department of exercise and sports science, has inserted sensors in players' helmets to research how much G-force it takes in different impact locations for a player to sustain a concussion.

But symptoms of concussions, such as dizziness, headaches, nausea and blurred vision, overlap with heat-related illnesses, such as heat exhaustion or heat stroke. And there's long been a theory that dehydration could make concussions more likely, Guskiewicz said.

"Occasionally, during a two-a-day practice, we'll have a player come in complaining with symptoms, and we can't tell if he's dehydrated or if it's a concussion," Guskiewicz said. "When we don't know for sure ... we go back to the data from the helmet system, and if there's no registered impact of greater than 50 or 60 Gs, it's unlikely that it's a concussion.

"Now, we'll also be able to look at the data from the thermometer pill, and see how hot he got. And we'll also be able to compare the G-forces to the temperature, and try to correlate whether they get higher when the body temperature is hotter."

It could make for an important educational tool for coaches all over the country; according to National Center for Catastophic Sports Injuries at UNC, there were 10 brain-related football fatalities (all high school players) nation-wide over the last two seasons.

To that end, Tar Heel players of different weights and positions plan to ingest the pills one more time during training camp, and twice more during this season.

Burney said he thinks the research is important, so he's willing to continue participating, even if it taxes his esophagus.

"They told me it was going to be the size of an Advil," he said of the pill, laughing. "But it was huge. "

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