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From helmet to sideline, device measures impacts to head

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By Jessica Sidman, USA TODAY

The latest football helmet innovation not only protects the head — it can read the mind.

Or at least what's happening to it.

The Head Impact Telemetry System measures and records impacts to the head and sends a wireless signal to the sideline in real time. The device, which is being tested by several high school and college teams, is a tool to learn more about head injuries, and researchers hope it eventually will lead to safer helmet designs.

Football is responsible for about 250,000 head injuries a year, according to the Brain Injury Association of America.

Although the HIT System is not intended to be used to diagnose concussions, medical personnel can use it to better assess a player after a potentially damaging impact, says Rick Greenwald, inventor of the device and president of Simbex, a research and development company in Lebanon, N.H. The system also can be used with video footage as a coaching tool to demonstrate proper tackling, Greenwald says.

"It's a tool for the doctor, it's a tool for the coach, and I think it can maintain the highest level of performance for players on the field," he says.

The HIT System, which has been under development since 2000, is made up of six sensors, a small computer, a battery and a radio for a total weight of about 6 ounces. The device fits inside the helmet. It also might someday be equipped with sensors that monitor vital signs such as heart rate and body temperature.

The system is sold as Revolution Helmets. A team set of 40 can cost more than \$50,000, says Thad Ide, vice president of research and development at Riddell, which sells the helmets.

The University of Oklahoma, Virginia Tech and Dartmouth College are among the nine NCAA Division I and high school teams that are testing the technology.

The National Football League has been looking into the system for several years, but it isn't rushing to implement it.

"When you're talking about million-dollar athletes, you want to make sure that whatever you're planning to use works," says Tony Egues, head equipment manager for the Miami Dolphins. Egues gave a presentation on the helmets this year at a conference co-sponsored by the American Orthopaedic Society for Sports Medicine and the NFL. He is waiting for further testing to determine whether the technology is appropriate for his team.

According to NFL medical liaison Elliott Pellman, who also is chairman of the NFL Committee on Mild Traumatic Brain Injury, the technology is "much, much, much too premature" to implement in the league. For now, the system does not have any clinical applicability, he says, and the NFL is comfortable with the way it now monitors and diagnoses concussions.

Ide says he believes that the system will become an integral part of helmets within the next few years.

In the meantime, Brock Schnebel, University of Oklahoma's team physician, is using the helmets to research concussions and compare impact frequency and force between high school and college players.

Schnebel, who found that college players sustained higher-level impacts more frequently, has finished his study.

"The real goal here is to learn about what it takes to produce a concussion and to use that information to protect the athletes with better rules and better headgear," Schnebel says.

The device also is being tested for application in skiing, soccer, equestrian sports, boxing and the military.

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