

# Sensors for brain injuries may help future athletes

By Anne Eisenberg, New York Times

Football teams of the future – even high school squads on limited budgets – may someday have a new tool to check players for brain injuries. It's a special form of headgear, packed with sensors that read the brain waves of athletes after they come off the field, thus detecting changes caused by the trauma of hard knocks.

The compact, portable sensors decipher neural activity by measuring changes in the brain's tiny magnetic field. These small magnetometers – still in the laboratory and in prototype – have yet to be tried on athletes. But their potential is enormous for brain imaging and for inexpensive monitoring of brain diseases, as well as for many other applications like the control of prosthetics, said Dr. José Luis Contreras-Vidal, a professor of electrical and computer engineering at the University of Houston.

Contreras-Vidal's research includes work on a system that will use brain signals to control prosthetic legs.

"This is a transformative technology" that could make brain interfaces available at a small cost, he said. "We could potentially use these devices to record in real time brain waves that could be analyzed for specific diseases such as Alzheimer's, or the progression of these diseases."

The research is occurring at a time of growing concern about collisions and subsequent brain injuries in sports – and the dire effects that may show up only many years later. But an inexpensive system for spotting changes in brain behavior could play an important safety role one day in boxing, football and many other sports.

The magnetic sensors, part of a field called optical or atomic magnetometry, were created at the Commerce Department's National Institute of Standards and Technology in Boulder, Colo., by Svenja Knappe and colleagues.

**Read the whole story**