"You’re listening to Brain Talk, from the Johns Hopkins Brain Science Institute."

Dr. Stevens: "We now know, and it’s been established beyond any doubt, that if you sustain a moderate or severe traumatic brain injury, your brain over time will change, it will lose volume, it will shrink basically."

Dale: "Dr. Robert Stevens is an associate professor of neuroscience at the John Hopkins School of Medicine who’s a specialist in neurological critical care. ‘As many as three million people in the U.S.’, according to Dr. Stevens, ‘will suffer a traumatic brain injury this year’.

Today on Brain Talk: the hidden epidemic of traumatic brain injury.

The number of people dying from head injuries sustained during car accidents has dropped nearly 40% since 1980, thanks to stricter seat belt and safety laws. But, according to the CDC, the number of brain injuries suffered by teenage athletes is rising—jumping 60% from 2001 to 2009.

Neuroscientists like Dr. Stevens and other health professionals are calling it a hidden epidemic."

Dr. Stevens: "It’s a cultural phenomenon and firmly ingrained belief that many people have, that the milder form of the injuries are without consequence, that you can get knocked out during a game, for example, and if you emerge very rapidly it’s likely that you’re gonna be okay and you can go on with your life."

Dale: "But the consequences of any kind of brain trauma can be serious. Symptoms range from trouble with balance, to difficulties controlling your temper, and in the worst cases, they trigger comas, paralysis or cause death."

Dr. Stevens: "What you see in the minutes, hours, days following traumatic brain injury is a very complex set of different processes ranging from destruction and death of brain cells to what is probably more common, which is alteration of function, the metabolic function, of those brain cells… to alteration to the blood flow."

Dale: "For example, if someone is rear-ended in a car accident, it could rupture brain nerve cells. When a bomb goes off, soldiers experience a pressure wave that goes through the brain and damages brain tissue."
Research shows that the volume of the brain shrinks after a traumatic injury. Dr. Stevens says ‘the death of nerve cells in the brain might be the cause of that’. Disturbing, considering as many as 40% of traumatic brain injuries aren't properly diagnosed or treated.

Dr. Stevens: “We need to create an infrastructure to provide the medical care that these people need… we recently assembled a group at Johns Hopkins to put together resources that would allow us to comprehensively diagnose and treat traumatic brain injury.”

Dale: “Dr. Stevens and his team are also focusing on how to predict what the consequences of a specific injury might be. They’re trying to find this out in part by mapping lesions of the brain and studying “white matter tracks”… these are the cables or highways of the brain that transmit information.”

Dr. Stevens: “It turns out that the white matter is really extremely vulnerable to traumatic brain injury. In fact when we get MRI scans in individuals, even after the very mildest form of traumatic brain injury, if we drill down to this white matter and analyze it using diffusion tensor imaging we can see that there is substantial evidence of damage.”

Dale: “The hope is that learning more about the lost connections will help doctors find ways restore them. Methods being researched include transplanting stem cells, or using brain stimulation in rehabilitation.

To learn more about traumatic brain injury, log on to brainscienceinstitute.org. I’m Dale Connelly and this is Brain Talk from Johns Hopkins University.”

Additional Information:

View the TBI research being conducted at Johns Hopkins Brain Science Institute
North American Brain Injury Society
NABIS is a society comprised of professional members involved in the care or issues surrounding brain injury. The principal mission of the organization is moving brain injury science into practice.
National Neurotrauma Society
The National Neurotrauma Society seeks to accelerate research that will provide answers for clinicians and ultimately improve the treatments available to patients.
International Brain Injury Association
The International Brain Injury Association (IBIA) is dedicated to the development and support of multidisciplinary medical and clinical professionals, advocates, policy makers, consumers and others who work to improve outcomes and opportunities for persons with brain injury.
Read "Traumatic Brain Injury in Professional Football: An Evidence-Base Perspective"

an article on Hopkins continuing medical education program on TBI

The following press conference and podcasts are available in article listed above:

Press conference (video)

NFL Interest: The NFL is taking the lead in efforts to research mild traumatic brain injury.

Concussions: Why is there so much emphasis on concussions in sports lately?

When to Start: Should assessments be made of all athletes even before they start playing?

Gathering Evidence: A recent NFL/Johns Hopkins conference on mild traumatic brain injury hopes to develop trustworthy data.

Research Directions: Many aspects of mild traumatic brain injury need much more investigation.

http://www.brainscienceinstitute.org