

# A scientific approach to assessing return to play after concussion in NFL

September 12 2012

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(Medical Xpress)—After sustaining a concussion, when can an athlete safely return to play? That's the primary question for professional and amateur athletes alike.

Now, University at Buffalo sports medicine researchers have been awarded \$100,000 from NFL Charities to develop the most objective, scientific method of determining when an athlete who has had a concussion can safely return to play.

NFL Charities, the charitable foundation of the [National Football League](#) owners, has awarded the 18-month grant to researchers at the Concussion Management Clinic in the Department of Orthopaedics in the UB School of Medicine and Biomedical Sciences. The grant to UB is one of 15 totaling \$1.5 million that NFL Charities is providing to researchers nationwide to support sports-related medical research on concussion/[traumatic brain injury](#) and [cardiovascular medicine](#).

"Concussion itself poses little risk if it is properly managed; the only risk acutely is hemorrhage, which is generally detected through CT scans," says John Leddy, MD, director of UB's Concussion Management Clinic; clinical associate professor of orthopaedics, [family medicine](#) and [rehabilitation sciences](#); and principal investigator on the grant.

"However, return to play before complete recovery involves much more serious risk," Leddy continues. "Therefore, it is important that a systematic, scientifically based return-to-play protocol be established

and that it is proven to be valid and reliable. This is what we will be doing with this grant."

To date, that hasn't existed, he says, with team physicians often relying on more subjective assessments of an athlete's ability to exercise without experiencing symptoms.

Leddy will conduct the research with his colleague, Barry Willer, PhD, UB professor of psychiatry and rehabilitation science, who is co-principal investigator on the grant.

Over the next 18 months, the UB researchers will test between 35 and 50 athletes from the Buffalo Bills, the Buffalo Sabres and athletes from Western New York colleges, including UB, who sustain concussions in the 2012-2013 season, as well as healthy control subjects.

"We are excited that NFL Charities has awarded this grant to University at Buffalo sports medicine researchers," says Mary Owen, Bills executive vice president for strategic planning. "The research that will be conducted by Dr. Leddy, Dr. Willer and others will benefit athletes at all levels and this is another example of how the Bills and the NFL continue to give back to our Western New York community."

Physiological variables that will be tested during exercise in concussed athletes and healthy controls include heart rate, blood pressure, pulmonary ventilation, cerebral blood flow and other measurements that Leddy and Willer have demonstrated are impacted when someone has had a concussion.

"We'll take these measurements both when concussed athletes are still having cognitive symptoms and when they feel like they have recovered," says Leddy. "We'll be looking at sophisticated MRI images and measuring the athletes' ability to exercise to a maximum rate without

a return of their symptoms, all of which will help us gather more objective physiological evidence."

Leddy and Willer have completed smaller, pilot studies showing that a controlled, progressive exercise program using a standard treadmill test can successfully treat athletes who have undergone concussions.

In addition, they note, the physiological responses to the treadmill test are objective. "Thus, [athletes](#) cannot 'fake' their way through, or minimize symptom reporting, while undergoing the test," adds Willer.

Provided by University at Buffalo

Citation: A scientific approach to assessing return to play after concussion in NFL (2012, September 12) retrieved 9 April 2024 from <https://medicalxpress.com/news/2012-09-scientific-approach-concussion-nfl.html>

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