

Concussion Test on the Sidelines of a Game or Practice

By developing a simple one-minute sideline test, researchers at the University of Pennsylvania School of Medicine have tackled the issue of diagnosing concussion head on. Up until now, sideline tests for concussion have been vague and often miss a large spectrum of brain functions that may have been affected. It is a well-known fact that any concussion left untreated or ignored may lead to serious or potentially fatal consequences, thus the Pennsylvanian researchers are eager to get this simple and effective test into action.

This one-minute test, called the King-Devick (K-D) test, essentially comes down to the athlete's ability to read numbers. By displaying a series of numbers on flash cards to the athlete and recording the time it takes to respond, any sideline doctor or coach can instantly determine if concussion has occurred. By comparing results to the athlete's baseline test, concussion can be confidently diagnosed if their response is more than five seconds slower. The test also checks for impairments of eye movement, attention, language and other symptoms of impaired brain function.

“This rapid screening test provides an effective way to detect early signs of concussion, which can improve outcomes and hopefully prevent repetitive concussions,” said the study's senior author, Laura Balcer, MD, Professor of Neurology, Ophthalmology and Epidemiology at the University of Pennsylvania School of Medicine. “If validated in future studies, this test has the potential to become a standard sideline test for athletes.”

In a study of 39 boxers and MMA fighters, post-fight test times on average for those who suffered head trauma worsened by 11.1 seconds, whilst those who had lost consciousness were on average 18 seconds slower. It is also worth noting that those who did not suffer any head trauma improved their times by more than a second on average.

It is hoped that the King-Devick test will become a standard procedure for coaches of intense sporting games such as rugby and boxing, aiding them in their decisions to keep players on or not. "Concussion is a complex type of brain injury that is not visible on the routine scans we do of the brain, yet is detectable when we measure important aspects of brain function, such as vision," said the study's lead author, Kristin Galetta, MS. "The K-D test is only one test on the sidelines, though, and the diagnosis of concussion requires a combination of tests and input of medical professionals."

A follow-up study at the University of Pennsylvania will examine the reliability of the K-D test and changes in athlete test scores over the course of a season