Courtesy Dr. James T. Eckner

Seven of eight athletes with a concussion had increased reaction times measured with the ruler-like device, which could be used on the athletic field, said Dr. James T. Eckner shown demonstrating the device.

Simple Device May Help To Diagnose Concussions

BY ROBERT FINN

An extremely simple device that tests an athlete's reaction time is showing promise in diagnosing concussions, according to a study announced in advance of its scheduled presentation at the annual meeting of the American Academy of Neurology.

Seven of eight Division I athletes who had suffered a concussion showed significantly slowed reaction times with the device, Dr. James T. Eckner said in an interview.

"It's actually very similar to an experiment that's done commonly in physics classrooms in high schools," said Dr. Eckner, of the department of physical medicine and rehabilitation at the University of Michigan, Ann Arbor. In that experiment, reaction times are judged by the speed with which people can catch a ruler dropped between their fingers.

The device "is a fancier ruler, essentially," Dr. Eckner said. "It's basically a dowel rod that we've coated in friction tape, and we've marked it in centimeter increments. And then at the base of it there's a little rubber disc, which is actually a hockey puck that it's embedded in."

VITALS

Major Finding: Seven of eight athletes who had a concussion had significantly increased length of reaction times with the device.

Data Source: Screening of 209 Division I athletes.

Disclosures: A provisional patent application has been filed on an updated version of the device. The study was supported by the Foundation for Physical Medicine and Rehabilitation and the University of Michigan.

The device is so simple that it has the potential of being used on the sidelines of a football game. The person being tested sits with his or her forearm resting on a table. The person administering the test holds the device so that the subject's hand is encircling, but not touching, the hockey puck. At a random moment the investigator drops the device, and the subject catches it as soon as he or she can.

"We measure then how many centimeters it fell before they caught it, and then we use a simple physics equation for a body falling under the influence of gravity to convert that into how many milliseconds it fell for," Dr. Eckner said.

Dr. Eckner and his colleagues recruited 209 members of Division I football, wrestling, and soccer teams. Before the start of the season the investigators measured each athlete's normal baseline reaction time. During the course of the season, eight of the athletes suffered concussions diagnosed by a physician. The investigators tested those eight athletes within 72 hours of their injury.

Seven of the eight athletes showed significant slowing of reaction.

"I think that our results are still a little bit preliminary," Dr. Eckner said. "They're all very encouraging, but the study we've got so far is fairly small. We've done some preliminary reliability data showing the inter-tester reliability and the test-retest reliability. But we do want to do that in a bigger sample to firm up the numbers that we have so far. ■