Modern Football Helmets Don't Do Very Much to Reduce Brain Injuries

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According to a new report, most commonly used football helmets do very little to reduce the risk of traumatic brain injury, improving your chances by a measly 20 percent compared with not wearing one at all.

The study, conducted by researchers at the Florida Center for Headache and Sports Neurology and the Florida State University College of Medicine, tested the effectiveness of 10 leading football helmets — including the Adams a2000, Rawlings Quantum, Riddell 360, Xenix X2 and others — using a modified drop test. The researchers equipped crash dummies, some wearing helmets and some not, with sensors to measure linear and rotational responses to a series of 12 mph impacts, and repeated the tests 300 times.

They found that helmets protect players from linear blows well enough — they reduce the likelihood of skull fracture and brain bruising by 60-70 and 70-80 percent, respectively. The helmets tested, however, offer insufficient cover for rotational blows, issued to the side of the head. Report co-author Dr. Frank Condi explains why this is problematic:

Biomechanics researchers have long understood that rotational forces, not linear forces, are responsible for serious brain damage including concussion, brain injury complications and brain bleeds. Yet generations of football and other sports
participants have been under the assumption that their brains are protected by their investment in headwear protection.

Condi concluded that though some helmets offer more protection than others, "all of them were terrible." Study author John Lloyd explains the mechanics of these types of injuries: “When the head comes to a sudden stop, if it’s rotating, the brain material is twisting inside the head... That can cause concussion and brain injury, including life-threatening subdural hematomas.”

Football-related brain injuries have become an increasingly controversial subject of late, as research shows that (not surprisingly) repeated blows to the head lead to long-term health defects. Some former NFL players suffer from early onset dementia, some are depressed and some undergo frightening changes of personality as they age. Chronic traumatic encephalopathy, or CTE, a degenerative disease that is difficult to diagnose while a patient is alive, was discovered during the autopsies of a number of NFL players who suffered untimely deaths. Recently, former NFL player Ronney Jenkins told CNN that he fears he is suffering from CTE, describing spiraling depression and suicidal instincts:

Before now, Jenkins was understandably reluctant to reveal such intimate details of his emotional life. But he feels that he is on the brink of something terrible. He hears echoes of his own experience in the lives of former players like Dave Duerson, Ray Easterling, and his former teammate and friend, Junior Seau. All three committed suicide and were later diagnosed with chronic traumatic encephalopathy.

Head trauma is also a risk for non-professional youth players, whose brains are still developing, says Dr. Condi:

Protection against concussion and complications of brain injury is especially important for young players, including elementary and middle school, high school and college athletes, whose still-developing brains are more susceptible to the lasting effects of trauma.

The report authors recommend switching to a soft helmet to better absorb the impact of the blows. This would mean removing the face mask, effectively returning football helmets to a design abandoned more than 50 years ago.

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