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SECOND IMPACT SYNDROME (SIS): RARE BUT FATAL

SEPEMBER, 2008. Jaquan Waller, 16, suffers a concussion during football practice at J.H. Rose High School in Greenville, N.C. He is examined by the school's first responder and cleared to play in a game two days later. During that game, Waller is tackled and collapses on the sidelines. He dies the next day. The medical examiner determines that Waller has died of *second impact syndrome*.



Second Impact Syndrome, or SIS, occurs when an athlete who has already sustained a head injury, sustains a second head injury before damage caused by the first injury has cleared up. Many times this occurs because the athlete has returned to competition and play before his or her first injury is completely healed. In the Waller case, the medical examiner noted that "neither impact would have been sufficient to cause death in the absence of the other impact."

Incidence of second impact syndrome is hard to calculate because the population at risk is unknown. However, between 1992 and 1997, 17 cases of second impact syndrome due to football injuries alone were reported.

Research shows that younger, less developed brains are more susceptible to second impact syndrome. Many experts recommend that after even a mild first concussion, athletes must be completely symptom-free – both at rest and during exertion – for at least a week before resuming play.

Many people do not realize that it may require days or even weeks before concussion damage is completely healed. Coaches should adopt the philosophy: "When in doubt, sit them out." Coaches, parents and medical personnel should watch for students who may hide or downplay such symptoms as headaches and dizziness. High school athletes in particular may resist being benched for medical reasons, especially if they perceive a game to be critically important. They do not want to let their teammates down or be labeled as "soft."

For the management of concussion in sports, the American Academy of Neurology has promulgated recommendations designed to prevent second impact syndrome and reduce the frequency of other cumulative brain injuries related to sports. These recommendations define symptoms and signs of concussion of varying severity and indicate intervals during which athletes should refrain from sports activity following a concussion. They are available at http://www.aan.com/professionals/practice/guidelines/pda/Concussion_sports.pdf.

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