

CONCUSSIONS IN SPORTS

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This can be extremely dangerous if the brain has not yet healed from the first concussion.

(6) The long-term consequences of multiple concussions are most widely seen in boxing and football. A progressive degenerative brain disorder (meaning it will get worse with time) called chronic traumatic encephalopathy (CTE) can result from a career filled with blows to the head. It can lead to unpredictable behavior, drug and alcohol abuse, depression and in some cases, suicide or an early death. The only way to know with certainty if someone suffers from CTE is to open up their brain, so CTE is difficult to diagnose while a person is alive. On

December 1st of 2012, 25 year old Jovan Belcher, an NFL linebacker with the Kansas City Chiefs, shot his girlfriend and then himself. A year after the funeral, Belcher's family requested that his body be exhumed and his brain be examined. The examination revealed that Belcher suffered from CTE which may have contributed to his deadly behavior. Multiple head traumas in athletes is also suspected in the later development of Alzheimer's, ALS (amyotrophic lateral sclerosis) and Parkinson's disease. Mohammed Ali's boxing career was a great one, but may have contributed to the development of his Parkinson's.

Article Questions

- 1) What are the two main things that protect the brain from physical damage?
 - 1) The skull/cranium.
 - 2) The CSF (cerebral spinal fluid) found between the brain and skull. (3)
- 2) When a boxer is hit in the head by a moving fist, what type of concussion injury does this cause? Explain how the brain is injured in this situation.

This will most likely cause a coup injury. In this case, the fist causes the skull to accelerate quickly upon impact while the brain within the skull is slower to move. This causes the inside of the skull to slam into the brain causing a coup injury at the point of impact. (4)
- 3) When an athlete has a hard hit to the head in a game, but shows no signs of a concussion, why might this be a dangerous situation?

This might be dangerous because they and their coach will want them to continue playing not knowing that they have had a concussion which will only show symptoms later. If they play, they will be at 3 times greater risk of getting another concussion. (5)
- 4) What are some of the long-term symptoms of a concussion?

Memory loss, sleep disorders and mood changes. (5)
- 5) What is CTE and how do athletes get this type of injury?

CTE is a progressive degenerative brain disease and athletes can get it if they have suffered from repeated concussions during their career. (6)
- 6) Why do you think Jovan Belcher's family want his brain examined after his death?

His family suspected that CTE might be responsible for his deadly behavior which was uncharacteristic for the young man. (6)
- 7) If a football player has a career that results in CTE, who do you think is responsible and why?

Various answers.