

Studies uncover the hard-hitting consequences of sports-related head injuries

November 14 2017

Playing contact sports can injure the brain even if head impacts don't result in concussions, according to new research presented today at Neuroscience 2017, the annual meeting of the Society for Neuroscience and the world's largest source of emerging news about brain science and health. The studies also suggest that relatively simple changes in equipment and athlete education could improve safety.

The risks of head injuries in sports have gained widespread attention in recent years, as studies of National Football League (NFL) players reveal the high prevalence of a neurodegenerative disease that impairs memory and changes personality. Although the focus has been on concussion, evidence indicates that less severe hits to the brain can also cause lasting damage.

Today's new findings show that:

- In soccer, "heading" the ball disrupts brain connections called axons to a larger extent in females than in males, a possible explanation for why women experience longer-lasting symptoms (Todd G. Rubin, abstract 394.08, see attached summary).
- Sustaining a concussion or simply playing one season of a contact sport temporarily decreases performance on a memory test, possibly because head impacts may affect the ability of the hippocampus to make new neurons (Melissa Danielle McCradden, abstract 394.22, see attached summary).
- Many professional football players—and older athletes in

particular—disregard safety recommendations when selecting their helmets, a finding that suggests stricter helmet rules are needed to ensure better protection (Raymond J. Collelo, abstract 754.08, see attached summary).

- Cadets at the U.S. Air Force Academy falsely believe they will be penalized for multiple concussions and thus may deny when one occurs, indicating better education on [concussion policy](#) is needed (Brian R. Johnson, abstract 028.01, see attached summary).

"Today's findings continue to emphasize the dangers of [head injuries](#) in sports, as well as reveal specifics on the way particular brain regions are affected," said Linda Noble, PhD, of the University of Texas at Austin and an expert on [brain](#) injuries. "Understanding how athletes think about [concussion](#)—when choosing their equipment or reporting injury—can help create better policies that will keep them safer."

Provided by Society for Neuroscience

Citation: Studies uncover the hard-hitting consequences of sports-related head injuries (2017, November 14) retrieved 19 April 2024 from <https://medicalxpress.com/news/2017-11-uncover-hard-hitting-consequences-sports-related-injuries.html>

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