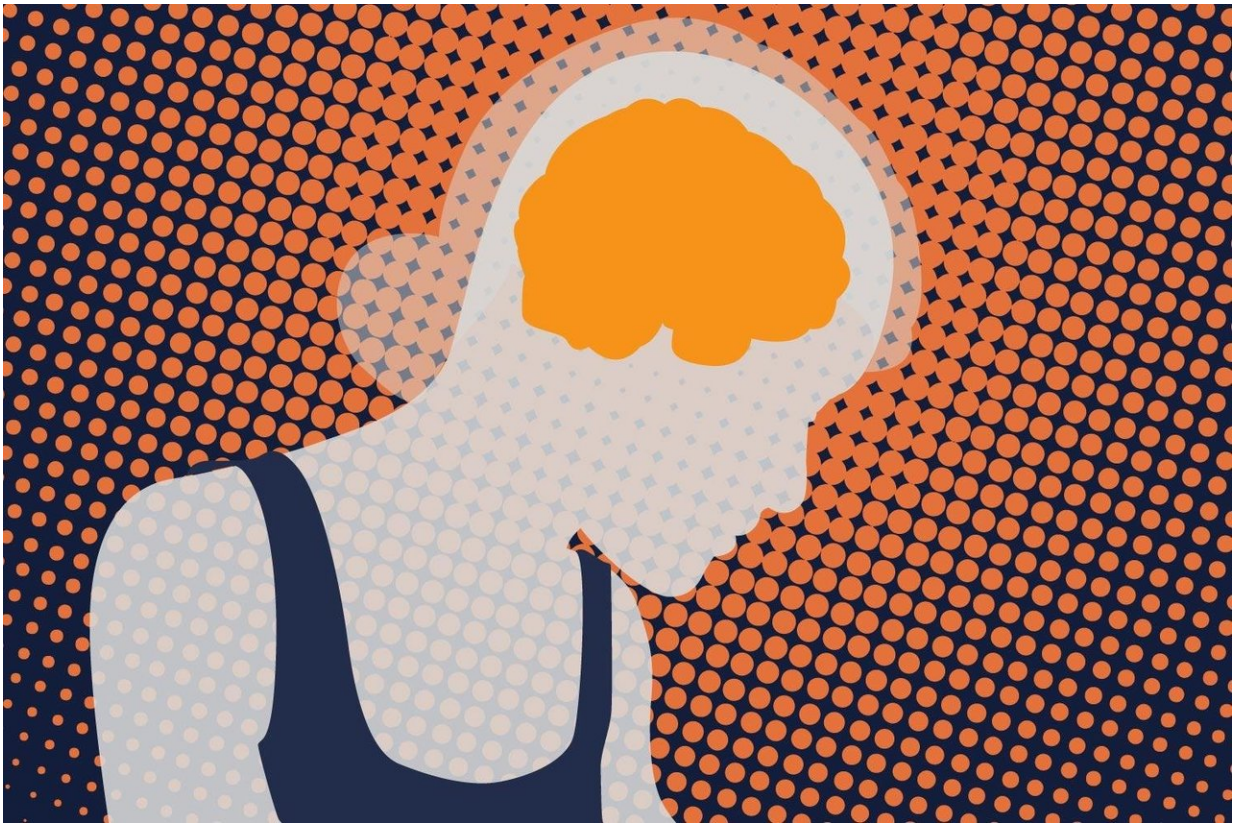


# Women more likely to suffer sports-related concussions, studies suggest

February 7 2018, by Laura Hoxworth

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Credit: University of Virginia

A new comprehensive literature review by University of Virginia faculty members reveals that female athletes could have an increased risk of suffering sports-related concussions.

Other gender differences in how concussions are experienced and treated are inconclusive, reinforcing that concussion requires highly personalized care.

In recent years, the topic of sport-related concussions – particularly surrounding football and the NFL – has risen from near-obscurity to the front page of the New York Times, best-selling books and blockbuster movies. But when everyone's talking about football, where do female athletes fit in?

The answer might surprise you. In a comprehensive literature review published in the October issue of the journal *Clinics in Sports Medicine*, Curry School of Education professor Jacob Resch and his co-authors report that female athletes have an increased risk for sport concussion, and tend to report more severe symptoms compared to male athletes.

Researchers analyzed nearly 160 studies on sport concussion in female athletes – a relatively understudied area, where individual studies have shown conflicting results. Resch said the goal was to provide an unbiased, thorough summary of where the research stands on the question, "Are there differences in how male and female athletes experience sport concussion?" The research encompassed three stages of concussion: before injury (predisposition), at the time of injury (symptom burden) and recovery.

Resch said the data consistently show that female athletes report concussions at a higher frequency than male athletes. According to Resch, this was true throughout the majority of articles that included sports played by both males and females, such as basketball, hockey or soccer.

Reasons for this difference are still unclear. Possible factors include biological differences, such as hormone fluctuations or neck strength.

Some studies suggest that women may simply be more likely to report their symptoms than men. Most likely, a combination of several factors are involved. The bottom line, Resch said, is that much more concussion research is needed – and most importantly, [health care](#) professionals should always treat each case individually.

"It doesn't matter if they're male or female – everyone is going to bring their own set of predisposing factors or symptoms or mood states to the injury," he said. "We still have a lot to learn about concussion, period, in addition to how sex may contribute to the injury. At the end of the day, concussions are and should be treated on an individual basis."

Susan Saliba, a Curry School professor of kinesiology and an experienced physical therapist and athletic trainer who has also studied concussion, said that the nature of the injury makes conclusive findings rare. Many personal factors – such as age, access to health care, medication and anxiety – can affect how an [athlete](#) experiences concussion, as well as how quickly they are likely to recover.

"One of the problems [with concussion] is that the diagnosis is based on symptoms," she said. "If we could identify the actual presence and severity of a concussion, it would certainly help. We are at the point where we understand that this is a really big deal, but we still don't have all of the tools that we need."

That's why, she said, it's important to continue studying concussion. More information only helps clinicians, athletes and families understand the norms and expectations of an injury, which in turn informs discussions and allows them to ask deeper, more specific questions.

This is particularly important for female athletes. If men and women do experience concussion differently, Resch said, clinicians must be aware in order to measure their symptoms and recovery against the most

accurate baseline. In fact, a common misconception is that male athletes are more susceptible to concussion, when the opposite appears to be true.

"This information, and learning how to better care for the female athlete, is really important," Resch said. "If you look at women's ice hockey, it's three times the risk of football. But, unfortunately, you don't see media coverage highlighting women's ice hockey, which leads to limited attention."

The senior author on the paper, Donna Broshek, a clinical neuropsychologist and professor of psychiatry and neurobehavioral sciences in UVA's School of Medicine, directs the Neurocognitive Assessment Lab and co-directs the Acute Concussion Evaluation Clinic at UVA. She said this type of research makes advances along the path toward more effective treatments.

"It is important to study female athletes because such research might identify risk factors for concussion that could potentially be modified to reduce risk of concussion, or to identify ways of managing or treating their concussions that might be distinct or unique," she said. "For example, if [female athletes](#) have different symptoms depending on the phase of their menstrual cycle, that might have some treatment implications. There are many factors that affect recovery, however, and clinical management should be individualized."

For any athlete, dealing with a concussion can be scary and confusing. The key, Resch said, is how clinicians interpret the research and present it to athletes and their parents.

For example, imagine the difference between a doctor saying, "You will take longer to recover because you're a woman" versus "You may take longer to recover, but I want you to understand that it's normal, and may be expected. We're tracking your individual symptoms in order to be

certain of your recovery."

"The delivery of that information is so key, because you want an athlete to walk away from that appointment feeling empowered," Resch said. "It's a matter of understanding the risks and consequences and what's normal. That kind of candid conversation is what I think sometimes is missed."

In all concussion cases, Resch cautions clinicians to make informed, evidence-based choices, to look at the breadth of articles on the topic, and to avoid stereotyping any athlete into a particular recovery paradigm.

As for athletes and their parents? "Take a deep breath," he said. "If you're concerned about sport concussion, the best thing to do is to talk to your health care provider, such as your school's certified athletic trainer, to understand what is currently being done to assess your child prior to, following and throughout recovery from a concussion. If absent, request a pre-injury assessment based on clinical measures of cognition (memory, reaction time, information processing), balance and symptoms.

"Also, discuss who is involved with your school's concussion management team and the roles that they play. Parents should be aware of what resources are available to better inform themselves about concussion. If an informational session is being held about [concussion](#) or other injuries, plan on attending."

Of course, this is relevant advice for all athletes and their parents. The more knowledge an athlete has to help them make informed medical decisions, the better – male or female.

**More information:** Jacob E. Resch et al. Sport Concussion and the Female Athlete, *Clinics in Sports Medicine* (2017). [DOI](#):

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