

[World](#)[Business](#)[Markets](#)[Breakingviews](#)[Video](#)[More](#)

HEALTHCARE & PHARMA JULY 31, 2018 / 5:19 PM / UPDATED 5 YEARS AGO

Soccer headings may damage women's brains more

By Lisa Rapaport, Reuters Health

4 MIN READ



(Reuters Health) - Female soccer players may be more likely to experience brain damage from heading the ball than male athletes, a U.S. study suggests.

Researchers examined brain scans of 49 male and 49 female amateur soccer players who reported a similar number of headings during the previous year. Half of the men had at least 487 headings, while half of the women had at least 469.

The scans were done with diffusion tensor imaging, a form of MRI that detects subtle brain damage by measuring the direction of the diffusion of water in white matter, the deep brain tissue that coordinates communication between brain regions.

Scans showed that the volume of damaged white matter in women was five times greater than it was for men, researchers report in Radiology.

Women had eight brain regions where greater levels of heading were associated with structural damage, compared with only three regions in men, the study also found.

“It has long been known that women fare worse, in general, following concussion,” said senior study author Dr. Michael Lipton of Albert Einstein College of Medicine and Montefiore Medical Center in New York City.

“However, some have considered this an artifact due to women being more likely to report symptoms than men,” Lipton said by email.

Results of the current study suggest that different outcomes from brain injuries in women and men can’t be explained by reporting because all of the participants in the current study experienced similar numbers of headings, Lipton noted.

“It shows the greater sensitivity of women at the level of brain tissue,” Lipton said.

Men and women in the study were similar in many ways. For example, they started playing soccer around the same age and played for roughly the same number of years, and they also played with similar frequency.

Beyond its small size, another limitation of the study is the lack of data on whether or how brain injuries from headings might translate into impairments in athletes' physical or mental abilities. Headings were also self-reported by athletes, and researchers only examined brain scans at one point in time.

“(We don’t know) whether these changes are sustained or if they change once an individual stops participating in soccer and is no longer exposed to heading,” said Tamara Valovich McLeod, director of athletic training programs and a sports medicine specialist A.T. Still University in Mesa, Arizona.

Brain injuries in soccer most often occur from head to head contact when two players are attempting to head the ball, or when players' heads come in contact with the ground or another athlete, McLeod, who wasn't involved in the study, said by email.

“There is limited evidence suggesting that heading the ball results in a concussion,” McLeod noted. “However, epidemiological studies comparing males and females do seem to suggest females have a higher rate of concussions in a sport where the rules are similar between the male and female game.”

The exact reason for this isn't clear, but one theory is that different neck strength in women and injury biomechanics resulting from this difference may predispose women to have more concussions than men. It's unclear whether there are other physiological differences between the sexes, McLeod added.

“Most studies suggest men have more such collisions than women, and thus it is confusing why women might have a greater risk of injury,” said Dr. Sara Chrisman, an injury prevention researcher at the University of Washington and Seattle Children's Hospital who wasn't involved in the study.

“Heading itself is a high risk event for concussion, but not due to hitting the ball,” Chrisman said by email. “At a high level of play almost all headers are contested, and thus athletes are more likely to collide with another player during a heading attempt, and little is known about why women and men might have different risk for brain injury.”

SOURCE: [bit.ly/2AqJapr](https://www.reuters.com/article/us-health-soccer-concussions/soccer-headings-may-damage-womens-brains-more-idUSKBN1KL2Y5) Radiology, online July 31, 2018.

Our Standards: [The Thomson Reuters Trust Principles.](#)

PAID PROMOTIONAL LINKS

Promoted by **Dianomi**

4 Reasons to Sell Your Losers

Charles Schwab



New Jersey: The List Of The Top Financial Advisor Firms Is Out

smartasset



Actionable insights from one of world's largest active asset managers

Capital Group



Personalize your portfolio based on your values and goals.

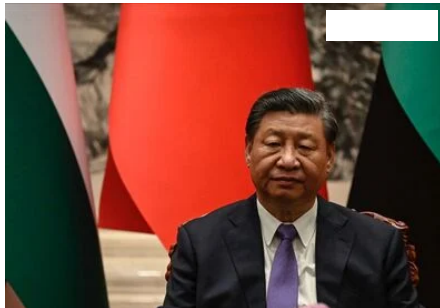
Goldman Sachs Asset Management



Best trading technology + \$0 commission equities & options.

TradeStation

MORE FROM REUTERS



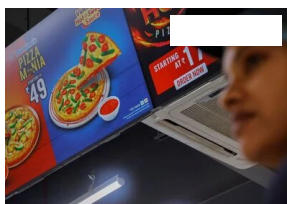
China's President Xi meets with Henry Kissinger in Beijing

20 Jul



US House Speaker McCarthy denies deal with Trump to expunge...

20 Jul



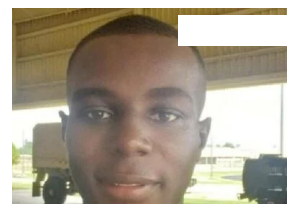
Focus: The world's cheapest Domino's pizza is in inflation-hit...

20 Jul



Nasdaq, S&P 500 futures fall after Q2 reports by Tesla, Netflix

20 Jul



US envoy says actively engaged in ensuring return of American in...

20 Jul

MORE FROM REUTERS



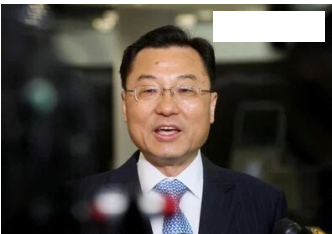
Everything's pink: How Barbiecore fashion has fueled a movie's buzz
20 Jul



Alabama to put inmate to death, state's first since...
20 Jul



EUROPE Barbie hits the box office
20 Jul



China's Washington envoy warns of retaliation against further US...



Focus: Made in Russia drive a revival of Russia

[Apps](#) [Newsletters](#) [Advertise with Us](#) [Advertising Guidelines](#) [Cookies](#) [Terms of Use](#) [Privacy](#) [Do Not Sell My Personal Information](#)



All quotes delayed a minimum of 15 minutes. See [here](#) for a complete list of exchanges and delays.
© 2023 Reuters. All Rights Reserved.