

Female athletes seek specialty care for concussion later than males

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Female athletes seek specialty medical treatment later than male athletes for sports-related concussions (SRC), and this delay may cause them to experience more symptoms and longer recoveries. Researchers from the Sports Medicine Program at Children's Hospital of Philadelphia (CHOP), reported these findings after analyzing electronic health records of sports participants aged 7 to 18.

The study raises the question of whether, in youth and [high school sports](#), inequities in medical and athletic trainer coverage on the sidelines are contributing to delayed identification and specialized treatment of concussion for female athletes, leading to more symptoms and longer [recovery](#) trajectories. The study was published in the *Clinical Journal of Sports Medicine*.

"There is speculation in the scientific community that the reasons adolescent [female athletes](#) might suffer more symptoms and prolonged recoveries than their [male counterparts](#) include weaker neck musculature and hormonal differences," says senior author Christina Master, MD, a pediatric and adolescent primary care sports medicine specialist and Senior Fellow at CHOP's Center for Injury Research and Prevention.

"We now see that delayed presentation to specialty care for concussion is associated with prolonged recovery, and that is something we can potentially address."

Dr. Master and her team analyzed a dataset containing records of 192 children between 7 and 18 who were diagnosed with an SRC and seen by

a sports medicine specialist. Females took longer to present to specialist care and had longer recovery trajectories than males. The median days to presentation for a subspecialty evaluation was 15 for females with SRC and 9 for males. This delay is important since time to presentation to specialized care greater than 1 week has been described as a factor associated with prolonged recovery.

Five distinct outcomes indicating return to preinjury function were measured to determine "recovery" in this group of athletes. By looking at average-days-to-recovery for female and [male patients](#) across these outcomes, researchers found that females returned to school later (4 vs. 3 days), returned to exercise later (13 vs. 7 days), had neurocognitive recovery later (68 vs. 40 days), had later vision and vestibular (balance) recovery (77 vs. 34 days) and returned to full sport far later (119 vs. 45 days).

Importantly, when researchers limited the analysis to those female and male patients that presented to the specialty practice for evaluation within the first 7 days of injury, the differences between males and females on all outcomes disappeared.

In sports where females sustain the highest rates of concussion— including those in this cohort of patients—specifically soccer, basketball, and cheerleading, there is generally less sideline medical coverage for games and inconsistent athletic training coverage for practice because they are categorized as "moderate-risk sports" based on all-cause injury. In stark contrast, many high school leagues require athletic training coverage at all football, ice hockey and men's basketball practices and games.

"It is possible that the lack of athletic training coverage at the time of injury may affect the time to concussion recognition during the first critical hours and days after injury," says Dr. Master. "This period is a

window of opportunity where specific clinical management, such as immediate removal from play, activity modification and sub-symptom threshold exercise is correlated with more rapid recovery."

Those who study pediatric concussion have been investigating why some concussions take longer to resolve than others so that they can identify those concussions early and implement appropriate concussion management plans to hopefully prevent persistent post-[concussion](#) symptoms. This study builds on that knowledge and suggests a tangible cause and solution: close the gap in athletic training and medical coverage between female and male sports.

More information: Natasha Desai et al, Factors Affecting Recovery Trajectories in Pediatric Female Concussion, *Clinical Journal of Sport Medicine* (2019). [DOI: 10.1097/JSM.0000000000000646](https://doi.org/10.1097/JSM.0000000000000646)

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