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# Men And Women With History Of Concussion Mend Differently, Study Finds

*ScienceDaily (July 10, 2008)* — Female soccer players and soccer players who have had a previous concussion recuperate differently from males or players without a history of concussion, new research released today at the 2008 American Orthopaedic Society for Sports Medicine Annual Meeting at the JW Marriott Orlando Grande Lakes shows. The study found that prior history of concussion and gender account for significant differences in test results following the injury.

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Because of these differences, the authors urge physicians and coaches to take an individualized approach to treating concussion patients.

"The results of this study suggest that physicians should not be taking a one-size-fits-all approach to treating concussions," said co-author Alexis Chiang Colvin, MD, Sports Medicine Fellow for the Department of Orthopaedics at the University of Pittsburgh Medical Center. "Our study shows that patients with a history of a previous concussion perform worse than patients without a previous history on neurocognitive tests taken after they sustain a concussion. Furthermore, females

perform worse than males on post-concussion testing, as well."

The authors chose to examine concussion recovery patterns in soccer players due to the popularity of the sport among both genders. Also, it is a non-helmeted sport with identical rules for all participation levels for both genders. In the United States, there are between 1 and 4 million estimated sports-related concussions each year. The most common causes of concussion in soccer include, head-to-head contact, head contact with other body parts and head-to-ground contact.

A concussion is an injury to the brain that results in temporary loss of normal brain function, usually caused by a blow to the head. Concussions can affect memory, judgment, reflexes, speech, balance and coordination.

The study had 234 soccer players (61 percent female, 39 percent male) ranging in age from 8 to 24 years old, who were

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given neuropsychological tests that measured attention, memory, processing speed and reaction time after their concussion. The results of the tests were analyzed to see if there were group differences in performance between male and female participants and those with a previous history of concussion.

The study found that females performed significantly worse than males on tests of reaction time. Females were also significantly more symptomatic than males. Additionally, there was a trend, although not significant, towards females testing poorly regarding verbal memory and processing speed when compared to males.

Soccer players with a history of concussion performed significantly worse on verbal memory testing after another concussion, the study found.

"There's a theory that males typically have a stronger neck and torso that can handle forces better," said Dr. Colvin. "But when we accounted for Body Mass Index in this study, we still found a difference between males and females. Therefore, there are differences in recovery between genders that cannot simply be attributed to size difference. More studies are needed to determine the reason for differences in recovery between males and females."

Adapted from materials provided by [American Orthopaedic Society for Sports Medicine](#), via [EurekAlert!](#), a service of AAAS.

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