

# Concussion-related biomarkers vary based on sex, race

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(HealthDay)—Concussion-related serum biomarkers vary by sex and race, which may complicate their interpretation, according to three studies published online Nov. 7 in *Neurology*.

Breton M. Asken, from the University of Florida in Gainesville, and colleagues conducted an observational cohort study and measured serum concentrations of biomarkers in 415 nonconcussed collegiate athletes without recent exposure to head impacts to describe the standardized normative distributions of each [biomarker](#). The researchers found that male participants had higher ubiquitin carboxy-terminal hydrolyzing enzyme L1 (UCH-L1) and S100 [calcium binding protein](#) B (S100B), while 2',3'-cyclic-nucleotide 3'-phosphodiesterase (CNPase) was higher among women. Black participants had higher baseline levels of UCH-L1 and S100B, while white participants had higher baseline levels of  $\beta$ -amyloid peptide 42 (A $\beta$ 42) and CNPase.

In a second study, Asken and colleagues examined the correlation between self-reported

history of concussion and baseline biomarker concentration in the same cohort. The researchers found a higher baseline A $\beta$ 42 concentration only among athletes with a greater number of concussions. The correlations of S100B, UCH-L1, and A $\beta$ 42 with cognitive scores were mediated by race status. In a third study including 29 athletes with sport-related concussion (SRC), within-patient analyses revealed increased S100B after SRC (elevated in 67 percent of patients), especially among samples collected within four hours post-SRC (elevated in 88 percent of patients).

"Our research shows that a blood test may aid [concussion management](#), but interpreting these tests can be complicated since biomarker levels differ depending on sex and race," Asken said in a statement. "Much more research is needed before a [blood test](#) can advance patient care for sports-related [concussion](#)."

Several authors disclosed financial ties to biopharmaceutical companies, including Banyan Biomarkers, which partially funded the studies.

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