

# Long-term structural changes found in brains of concussed female athletes

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Female athletes who have suffered at least one concussion showed structural differences in the corpus callosum, the structure that connects the two hemispheres of the brain, compared to unconcussed female athletes and other women. The brain images captured 6 months post-concussion suggest long-term changes in the corpus callosum, mainly in the region where it projects to the prefrontal and premotor areas of the brain, as described in an article in *Journal of Neurotrauma*.

In the article "Long-Term Abnormalities in the Corpus Callosum of Female Concussed Athletes," coauthors Emilie Chamard, Genevieve Lefebvre, Maryse Lassonde, and Hugo Theoret, University of Montreal and CHU-Sainte-Justine, Montreal, Canada, used [diffusion tensor imaging](#) to examine of the corticospinal tract and corpus callosum of the study participants. They found no significant differences between the groups of women in the corticospinal tract, but reported evidence of microstructural changes and a lower volume of white matter fibers in the corpus callosum.

"This study is of importance from several perspectives. It reinforces the need to analyze gender-specific responses following TBI, while emphasizing that concussive injury in [female athletes](#) elicits regionally specific changes in the [corpus callosum](#), which include prefrontal connections, a finding not routinely discussed in the literature," says John T. Povlishock, PhD, Editor-in-Chief of *Journal of Neurotrauma* and Professor, Medical College of Virginia Campus of Virginia Commonwealth University, Richmond.

**More information:** Emilie Chamard et al. Long-Term Abnormalities in the Corpus Callosum of Female Concussed Athletes, *Journal of Neurotrauma* (2016). [DOI: 10.1089/neu.2015.3948](https://doi.org/10.1089/neu.2015.3948)

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