Researchers discover biological markers for concussions

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A new study led by researchers from Northwestern University's Auditory Neuroscience Laboratory, has found that a biological marker in the brain's auditory system could improve concussion diagnosis and recovery.

Concussions refers to a type of mild traumatic brain injury, that occurs as a result of a direct or indirect blow to the head causing alterations in the brain functions. However, every concussion injures brain to some extent.

Despite widespread scientific and public interest, no single test has been validated to reliably diagnose a concussion. As per Nina Kraus, study's lead author, "This biomarker could take the guesswork out of concussion diagnosis and management. Our hope is this discovery will enable clinicians, parents and coaches to better manage athlete health, because playing sports is one of the best things you can do."

For the study, researchers examined 40 children with concussions and a control group of children without concussions. They observed participant's brain activity as they were exposed to auditory stimuli, Kraus and her colleagues discovered a distinct pattern in the auditory response of children who suffered concussions compared to children who had not. The researchers placed three sensors on children's heads to measure the frequency following response, which is the brain's automatic electric reaction to sound. They successfully identified 90% of children with concussions and 95% of children who did not have concussions. The results were published in the journal Scientific Reports.

"With this new biomarker, we are measuring the brain's default state for processing sound and how that has changed as a result of a head injury. This is something patients cannot misreport, you cannot fake it or will your brain to perform better or worse, Kraus said in a university news release. Making sense of sound is a complex brain function, which is why it's not surprising that a blow to the head would disrupt this delicate machinery," she explained.

What occurs isn't a global disruption to sound processing, Kraus added. "It's more like turning down a single knob on a mixing board." This study is a first step toward creating a reliable, portable and affordable platform to diagnose concussions, she said.

Source:	*Northwestern University*
Link to the source:	https://medlineplus.gov/news/fullstory_162701.html
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