

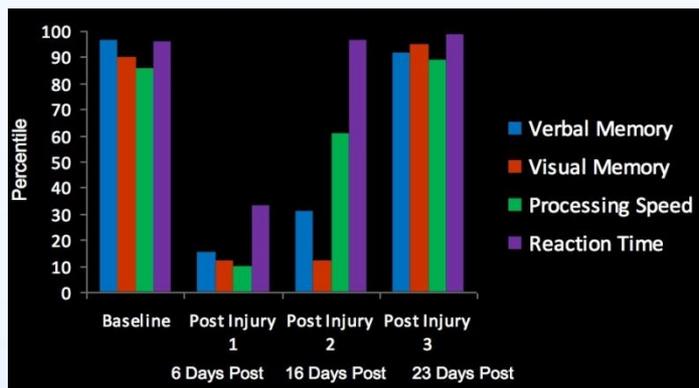
The use of fMRI in the imaging of concussions

What is a concussion?

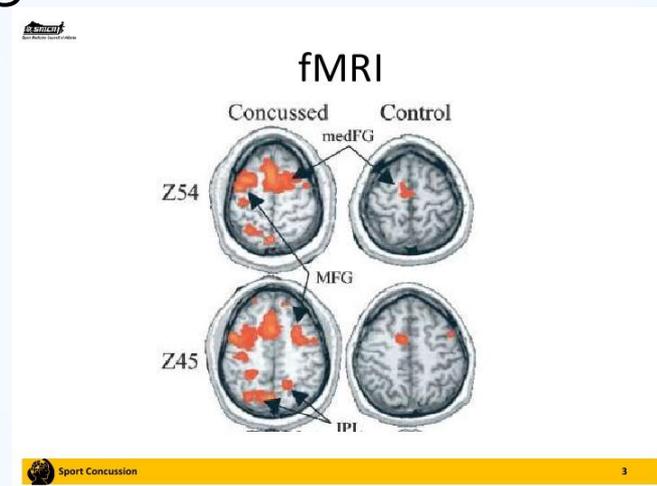
A concussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces. A few of the many common symptoms that correlate with concussions are headaches, confusion, dizziness, nausea, depression, and irritability. (Ptito,2008)

How does functional Magnetic Resonance Imaging (fMRI) contribute to the evaluation of concussions?

The pathologic changes following a Concussion are usually functional Disturbances not structural damage. Therefore fMRIs are used to detect Functional disturbances of the brain that structural Imaging methods can not detect. (Ptito, 2007)



This graph represents a few of the many functional disturbances of the brain. This is a representation of how long it takes each of these functions to be back to there normal healthy functioning percentages. This timeline can be different for everyone. The effects and symptoms of a concussion can last weeks or up to months. That why it is important to use the proper imaging techniques to thoroughly assess the structural and functional damage to diagnose a patient correctly. (Misunderstanding of a concussion. (2018, December 12)



This image represents the results of a functional fMRI of a controlled (non concussed) patient and a concussed patient. The image on the left represents how much brain activity it took a concussed brain to complete the same specific task as the non concussed brain pictured on the right. As you can see the concussed brain has to work much harder to complete the same specific task that the non concussed brain did. (Yegswat Follow. (2010, Ocotober 11)

MRI vs. fMRI

Concussions involve a disruption of the brain function rather than structural damage. The majority of the time CT scans or MRI tests show no obvious damage. FMRI detects functional disturbances of the brain that MRI cannot. Without the proper imaging studies concussions can go undiagnosed which could lead to further damage if not treated properly. (Yegswat Follow. (2010, Ocotober 11)

References

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