



## **Susceptibility Weighted Imaging and White Matter Abnormality Findings in service members With Persistent Cognitive Symptoms Following Mild Traumatic Brain Injury**

### **Purpose**

Mild traumatic brain injury (mTBI) is a major health concern among active duty service members and Veterans returning from combat operations, and identifying biomarkers that can improve diagnosis has been an important research goal. Biomarkers that indicate mTBI are white matter hyperintensities (WMHs). The purpose of this study is to compare the brain abnormalities identified using more traditional MRI imaging to those identified using more advanced MRI imaging such as susceptibility weighted imaging (SWI).

### **Participants**

One-hundred and fifty-two active duty service members (77 with mTBI, 58 with orthopedic injuries only, and 17 with post-traumatic stress disorder [PTSD] only) participated.

### **How was the study conducted?**

Participants underwent MRI and neuropsychological evaluation at a large military treatment facility.

### **Findings**

Participants with higher numbers of WMHs only differed in one cognitive area from those without WMHs: that of working memory. These findings suggest that more advanced SWI is of use in identifying these biomarkers. The findings also suggest that mTBI impacts patients in complicated ways, and that further studies are needed to contribute to our understanding of mTBI.

### **Military Impact**

Further study of biomarkers such as WMHs is needed to further understand mTBI. Increased understanding would improve diagnosis and recovery for Veterans and service members with mTBI.

*Tate D.F, Gusman M., Kini J., Reid M., Velez C.S., Drennon A.M., Cooper D.B., Kennedy J.E., Bowles A.O., Bigler E.D., Lewis J.D., Ritter J., York G.E. Susceptibility Weighted Imaging and White Matter Abnormality Findings in service members With Persistent Cognitive Symptoms Following Mild Traumatic Brain Injury. Military Medicine. 2017 Mar; 182(3): e1651-e1658. PubMed: 28290939*