

2017 AAN SPORTS CONCUSSION CONFERENCE ABSTRACT

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Abstract Title: Neurofilament light and tau levels in combat sports: The Professional Fighters Brain Health Study

Press Release Title: MMA Fighters, Boxers May Have Signs of Long-term Brain Injury in Blood

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Background: Plasma measures of neurofilament light (NFL) and tau may be markers of acute neural injury but less is known of their application in chronic mild traumatic brain injury. This study examines these blood markers in a cohort of professional fighters.

Design/Methods: The cohort consists of 291 active professional fighters (128 boxers, 163 mixed martial arts; mean age 29.9 years), 44 retired fighters (38 boxers, 6 MMA; mean age 45.3 years) and 103 controls (mean age 29.58) who participate in the Professional Fighters Brain Health Study. Plasma was obtained at baseline visit and concentrations of neurofilament light and tau were determined; all samples were analyzed at the same time using the same batch of reagents by laboratory technicians who were blind to clinical information.

Results: Active professional fighters have higher levels of NFL and tau compared to retired fighters or controls ($p < 0.0001$). NFL concentrations, but not tau concentrations, were correlated with the amount of self-reported sparring done in the 2 weeks prior to baseline. Neither NFL nor tau levels were associated with age or ethnicity in any of the groups or number of professional fights in the active fighters. Higher NFL levels were correlated with lower performance on computerized tests of processing speed.

Conclusions: This study supports the idea that concentrations of NFL and tau in blood are elevated in individuals exposed to repetitive head trauma, with NFL levels more tightly linked than tau to acute exposure to head trauma.

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