

# Does amateur boxing cause brain damage?

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Blows to the head in amateur boxing appear to cause brain damage, according to research that will be presented at the American Academy of Neurology's 59th Annual Meeting in Boston, April 28 – May 5, 2007.

"Despite the high prevalence of brain damage as a result of professional boxing, until now there has been little information on the possible risks for brain injury in amateur boxing," said study author Max Hietala, MD, PhD, with Sahlgrenska University Hospital, Goteborg, Sweden.

For the study, researchers used lumbar puncture to determine if there were elevated levels of biochemical markers for brain injury in the cerebrospinal fluid (CSF) of 14 amateur boxers. Boxers were tested after a fight and then again three months after rest from boxing. The study also included 10 healthy men who were not athletes.

The study found high CSF levels of neuronal and glial markers suggestive of brain damage after a fight. A particular marker for neuronal damage, neurofilament light (NFL), was four times higher in boxers within 10 days of the fight as compared with healthy non-athletes. These increased levels returned to normal after three months rest from boxing.

In addition, the increased levels after a fight were significantly higher among amateur boxers who had received more than 15 high impact hits to the head compared with boxers who reported fewer hits. The boxers who had received more than 15 high impact hits to the head had seven to eight times higher NFL-levels post fight compared to their levels

following a three-months rest.

"Repeated hits to the head are potentially damaging to the central nervous system, and our results suggest CSF-analysis could be used for medical counseling of athletes after boxing or head injury," said Hietala.

The study was extended to soccer players heading the ball repeatedly from long and high goal kicks. No increased levels of biochemical markers for brain damage in cerebrospinal fluid were found. "This data shows headings in soccer is not associated with any neurochemical evidence of brain damage," said Hietala.

Source: American Academy of Neurology

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