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No strong evidence linking amateur boxing with long-term brain injury

Amateur boxing and risk of chronic traumatic brain injury: a systematic review of observational studies

The evidence linking amateur boxing and chronic traumatic brain injury is not strong, concludes a study published on bmj.com today. As such, the researchers say they cannot firmly prove nor reject the theory that amateur boxing leads to chronic brain injury.

Although the evidence for chronic traumatic brain injury in amateur boxing is less clear cut than that in professional boxing, the safety of amateur boxing continues to be questioned.

The British Medical Association wants a complete ban on boxing (amateur and professional), mainly because of the purported risk of cumulative brain injury. However, no recent or systematic review has been performed to assess the evidence for this in the amateur sport.

So a team of sports physicians and clinical academics reviewed the evidence to determine whether amateur boxing leads to chronic traumatic brain injury.

They identified 36 observational studies of amateur boxing and chronic traumatic brain injury. Differences in study design and quality were taken into account to minimise bias. They defined chronic traumatic brain injury as any abnormality in neurological examination, brain imaging, psychometric testing, or electroencephalography (a measurement of the brain's electrical activity).

Overall, 15 (42%) of the 36 studies concluded that relevant abnormalities were present, at least in a proportion of boxers studied. However, the quality of evidence was generally poor.

The best quality studies were those involving psychometric tests and these yielded the most conclusive negative results (no long-term effect of boxing on brain function). Only four of 17

(24%) better quality studies found any indication of chronic traumatic brain injury in a minority of boxers studied.

Similarly, in the six studies that used magnetic resonance imaging (generally accepted as the best method of determining subtle damage and degenerative change), only one concluded that relevant abnormality was present. This was a cyst in a single boxer, which was possibly congenital.

Positive findings were generally limited to studies of poorer quality and design, and few were of sufficient quality to conclude anything other than a weak association.

Amateur boxing is becoming an increasingly popular participation sport, say the authors.

This review neither seeks to endorse nor oppose the sport of amateur boxing. Nevertheless, the current evidence, such as it exists, for chronic traumatic brain injury as a consequence of amateur boxing is not strong, they conclude.

In an accompanying editorial, Paul McCrory, neurologist and sports physician at the University of Melbourne, suggests that, because today's boxers have shorter careers and reduced exposure to repetitive head trauma, the likelihood of this condition developing is probably low.

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