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Boxing Damages Brain Despite Headgear Protection

Demential pugilistica does not only occur in career boxers, as previously thought; it can also affect amateur boxers

Amateur boxers are as likely as professional ones to suffer brain damage after fights in the ring, according to a recent study conducted by Swedish researchers. Despite the fact that amateur boxers have shorter fights and wear protective headgear, they are very prone to developing dementia pugilistica.Dementia pugilistica, also known as the punch-drunk syndrome, is a neurological condition which affects professional boxers and occurs due to the numerous and repetitive blows received by boxers throughout time. Dementia pugilistica's main symptoms are dementia and Parkinsonism. The average onset of the neurological disorder occurs after 16 years after being in the boxing ring. But the study carried out by researchers at the Sahlgrenska University Hospital found that dementia pugilistica disease does not only affect career boxers, it can also be developed by amateur boxers who have been in the boxing ring for a shorter period and received, by far, fewer head blows. Henrik Zetterberg, M.D., Ph.D., of the Sahlgrenska University Hospital stated: "to our knowledge, no study has examined the short-term effects of amateur boxing on the brain in direct connection to a bout."In the study, the team analyzed the cerebrospinal fluid of 14 amateur boxers with an average age of 22 after 7 to 10 days after they had a fight in the boxing ring and also after a 3-years period after the match. They compared the results from amateur boxers with results from perfectly healthy people who were not involved in any kind of sport which could cause them head traumas.Findings of the cerebrospinal fluid tests after boxing matches showed that amateur boxers presented increased levels of markers for neuronal, axonal and astroglial injuries. "The current study contributes new information about brain injury risks in amateur boxing. Data suggest that participation in an amateur boxing bout is directly associated with neuronal and astroglial damage, as reflected by the increase in NFL, T-tau, and GFAP concentrations in cerebrospinal fluid," explained the authors.But the same tests taken after 3 months of rest from fights in the ring proved that boxers presented decreased, therefore normal, levels of the fibrillary acidic protein (marker for astroglial injury). However, levels of neurofilament light protein (marker for neuronal and axonal injuries) were still higher in amateur boxers as compared to healthy people not involved in any kind of violent sport."The molecular changes detected are likely to be even more pronounced in professional boxers and in boxers who have received a knockout punch. If verified in longitudinal studies with extensive follow-up regarding the clinical outcome, analysis of cerebrospinal fluid may provide a scientific basis for medical counseling of athletes after boxing or head injury," Swedish researchers concluded in their report published in the Archives of Neurology journal.