

# How old is too old to fight in boxing? Age is not just a number

## Abstract

Professional boxing is a physically demanding combat sport. In boxing every punch thrown to the head is thrown with the intention of winning by causing a knockout (KO). As a result, concussive head injuries are common in boxing. Traumatic subdural hematoma remains the most common cause of boxing related mortality. As older boxers (age greater than 40) enter the ring, concern is raised for their neurological health. How old is too old to fight in boxing? Should there be a cut-off age beyond which boxers should not be allowed to compete professionally?

**Keywords:** boxing, combat sports, injuries, older athlete, traumatic brain injury

Volume 7 Issue 2 - 2024

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**Received:** May 15, 2024 | **Published:** May 27, 2024

## Commentary

As stated in a previous commentary in MOJ Sports Medicine, boxers' physical fitness and skillsets begin to decline as they start to age beyond their mid-30's.<sup>1</sup> The physical "decline curve" may vary from boxer to boxer but is inevitable with aging. Some boxers show a slow steady decline with age, others may remain stable and then manifest a sudden accelerated decline after crossing their mid-30's. The decline may be offset or held at bay with good physical conditioning. Defensive boxers tend to age more gracefully as compared to boxers (sluggers) whose tradecraft is characterized by standing in the middle (pocket) and trading punches.

The decision to grant a boxer older than 40 licenses to fight should be made on a case-by-case basis based on the following criteria:

1. The age of the boxer at the time of the proposed bout: every year above 40 may make a difference to the overall risk stratification score.
2. Video analysis of current skill level should be carried out. This can be accomplished by requesting a video of the boxer in training.
3. A written statement from the trainer/coach certifying that in his/her opinion the boxer is physically fit to fight.
4. Determine cardiovascular fitness to fight based on the following tests: electrocardiogram (EKG), echocardiogram (ECHO).
5. If needed a formal cardiovascular clearance to fight should be requested from a cardiologist.
6. On a case-by-case basis, the cardiologist may request additional tests such as a stress test.
7. Determine neurological fitness to fight based on the following tests: magnetic resonance imaging of the brain (MRI), magnetic resonance angiography of the head (MRA) to rule out vascular malformations such as aneurysms and arteriovenous malformations.
8. If needed a formal neurology clearance to fight should be requested from a neurologist.

9. On a case-by-case basis, the neurologist may request additional tests such as a formal neurocognitive evaluation to detect latent neurodegenerative disorders such as traumatic encephalopathy syndrome (TES) based on the National Institute of Neurological Disorders and Stroke Consensus Diagnostic Criteria for TES.<sup>2</sup>

## Discussion

With older fighters applying for licensure, Athletic Commissions face the challenging task of ensuring their health and safety in the ring. The decision to grant licensure to a combatant older than 40 should be made on a case-by-case basis. No one size fits all with respect to the medical tests that need to be carried out to determine fitness to fight. Individualized medical decision making should be exercised using combatant specific data such as absolute age, weight, professional record, fighting style, medical comorbidities (essential hypertension, diabetes mellitus, and dyslipidemia), current level of physical conditioning of the athlete and results of tests such as EKG, ECHO, and MRI brain. If deemed necessary, specialist opinion and clearance to fight should be obtained from a cardiologist and neurologist.

Older combatants need counseling about the lasting effects of concussion on the aging brain. Over the years, robust research has linked concussions, moderate to severe traumatic brain injury to an increased risk of developing neurodegenerative diseases such as TES and Alzheimer's disease.<sup>3</sup> The consequences of concussions are not just short-term such as headache but also include structural degenerative changes in the temporal and frontal lobes. In the absence of biomarkers, there is usually a long latency period between a boxer's head impact exposures and detection of clinical symptoms of chronic traumatic encephalopathy.<sup>4</sup>

## Conclusion

As boxer's age and start to physically decline, concern is raised for their health and safety in the ring. Age is not just a number. Age does matter when it comes to professional boxing! There is a reason why in many Commissions jurisdictions age greater than 40 flags a boxer as a high-risk combatant. Licensing these boxers to fight professionally must remain the exception rather than the rule.

## Acknowledgments

None.

## Conflicts of interest

The author declares that there are no conflicts of interest.

## Funding

No targeted funding reported.

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