More head impacts increase risk for death in NFL players

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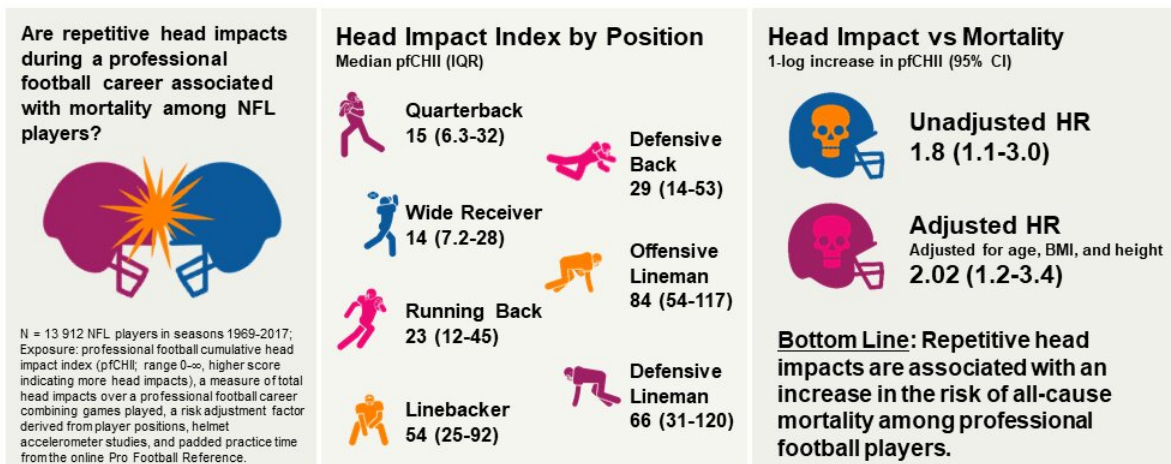An increase in repetitive head impacts is associated with an increased

hazard of death among National Football League (NFL) players, according to a study published online May 11 in *JAMA Network Open*.

Brittany L. Kmush, Ph.D., from Syracuse University in New York, and colleagues analyzed data from the Pro Football Reference (1969 to 2017). The analysis included 14,366 players with follow-up through July 1, 2018, including 13,912 players with calculations for the professional football cumulative head impact index (pfCHII).

The researchers found that overall, 5.3 percent of players had died. Among the players in the pfCHII analysis, the median pfCHII score was 32.63. There was a significant association with an increased hazard of death for each 1-log increase in pfCHII (hazard ratio, 2.02) after adjustment. There was also a significant association with the quadratic pfCHII (hazard ratio, 0.91), indicating that the hazard of death increased at a decreasing rate, whereas the pfCHII increased.

"Reduction in repetitive head impacts from playing football or other activities through additional rule and equipment changes may be associated with reduced mortality," the authors write.

Association of Professional Football Cumulative Head Impact Index Scores With Mortality Among NFL Players

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Are repetitive head impacts during a professional football career associated with mortality among NFL players?

N = 13 912 NFL players in seasons 1969-2017; Exposure: professional football cumulative head impact index (pfCHII; range 0-∞, higher score indicating more head impacts), a measure of total head impacts over a professional football career combining games played, a risk adjustment factor derived from player positions, helmet accelerometer studies, and padded practice time from the online Pro Football Reference.

Head Impact Index by Position
Median pfCHII (IQR)

Quarterback
15 (6.3-32)

Wide Receiver
14 (7.2-28)

Running Back
23 (12-45)

Linebacker
54 (25-92)

Defensive Back
29 (14-53)

Offensive Lineman
84 (54-117)

Defensive Lineman
66 (31-120)

Head Impact vs Mortality
1-log increase in pfCHII (95% CI)

Unadjusted HR
1.8 (1.1-3.0)

Adjusted HR
Adjusted for age, BMI, and height
2.02 (1.2-3.4)

Bottom Line: Repetitive head impacts are associated with an increase in the risk of all-cause mortality among professional football players.

JAMA Network Open.

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NFL players who play certain positions that receive more head impacts have an increased risk of premature death. Credit: JAMA Network Open

More information: Abstract/Full Text

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