WHITE MATTER HYPERINTENSITIES IN ATHLETES

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BACKGROUND

- Repetitive head impacts (RHI) in contact sport athletes are linked to white matter hyperintensities (WMH), visible on MRI.
- WMH may serve as biomarkers for small vessel disease and neurodegeneration.
- Prior studies show inconsistent links between concussions, WMH, and cognition.
- Objective: Assess how concussion history and vascular risk influence WMH and cognitive/mood function.

METHODS

- Design: Cross-sectional study of 96 male athletes vs. 21 controls.
- Imaging: MRI-based WMH quantification; normalized to total intracranial volume (TIV).
- Cognitive Assessment: Executive function, memory, mood via standardized tests.
- Vascular Risk: Structured questionnaire (hypertension, lipids, diabetes).
- Analysis: Linear regression controlling for age; subgroup by age <60 vs. ≥60.

RESULTS

- WMH: Athletes had higher WMH (1.3 vs. 0.8 ml, $p = 0.024$); no difference after TIV normalization.
- Age was the strongest predictor ($p < 0.001$); not concussion history or vascular risk.
- Cognition: Concussions linked to worse memory ($p = 0.035$) and executive function ($p = 0.039$).
- Mood: No association with concussion; elevated in those using recreational drugs ($p = 0.039$).
- Subgroup: No significant WMH difference by age group, slight trend in older early-starters.

- Thank you