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# Does the use of artificial turf contribute to head injuries?

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## Abstract

**BACKGROUND:** A number of high-profile professional football players have suffered career-ending concussions. The purpose of this article is to test the surfaces used by a professional team to determine their impact-attenuating properties.

**METHODS:** An accelerometer was dropped from a height of 48 inches onto three different playing fields in the St. Louis area: an indoor artificial turf practice field, a grass outdoor practice field, and the artificial turf field at a domed stadium. The accelerometer was dropped 20 times from a height of 48 inches onto each surface.

**RESULTS:** Statistical analysis of the peak Gs for impacts onto each surface indicate all three are statistically different. The artificial surface of the domed stadium was the hardest surface, with an average peak acceleration of 261 Gs compared with 183 Gs for the indoor artificial turf practice field and 246 Gs for the outdoor grass field.

**CONCLUSION:** The surface used to play league games has the least impact attenuation of any field tested and may contribute to the high incidence of concussion in football players.

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