

Magnetic repulsion suggested as possible means to reduce concussions in football

November 17 2014, by Bob Yirka



Credit: BalticHurricanes/Wikipedia

(Medical Xpress)—Neuroscientist Raymond Colello has been testing the idea of reducing concussions in American football by placing small magnets in helmets to produce a repulsive force between two players. He presented his ideas at this past week's annual Society for Neuroscience meeting.

Colello contends that most concussions that occur during a football game happen because of head-to-head collisions between players. Instead of trying to reduce the damage that occurs because of such collisions, he is trying to reduce the degree of impact. He believes that embedding magnets in helmets to cause a repulsive force as helmets from two different players move close together prior to contact, would reduce the degree of impact on the player, and thus reduce the likelihood of a concussion.

Colello has been testing the idea, he's dropped objects with neodymium magnets on them in a lab and onto a surface below outfitted with same pole-faced magnets at distances ranging from four feet to just six inches—impacts that would reasonably simulate what a football player might experience. He reports that two magnets set face to face exert approximately 100 pounds of repulsive force and that a helmet dropped from 48 inches would typically generate 120 g's of force. With the magnets in place, that force drops below 100 g's, enough to mean the difference between non-injury and [concussion](#).

While it does appear possible that such an outfitted helmet would benefit linemen, and perhaps runners and receivers, it's unlikely it would add much benefit for quarterbacks as they typically sustain concussions due to low tackling from behind, which causes their head to ratchet back, hitting the ground really hard.

Colello points out that adding magnets to [helmets](#) would raise the price of the helmet from \$50 to \$100, depending on the size of the players and would add approximately a third of a pound of weight. He notes also that he doesn't believe the magnets would cause harm to [players](#), as a typical MRI scan exposures people to 10 to 30 times as much magnetism—and doesn't appear to cause any harm. He plans to continue his study, noting that he's ordered magnets that will fit in a helmet and will be testing them on the heads of crash test dummies made

to move via a zipline.

More information: Utilizing magnetic repulsion to reduce forces generated at helmet-to-helmet collisions in football, Neuroscience 2014 meeting, [www.abstractsonline.com/Plan/V ... 9-afaa-502c0e680ca7#](http://www.abstractsonline.com/Plan/V...9-afaa-502c0e680ca7#)

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