

## Applications

- Reducing impact forces in collisions
- Decreasing the number of concussions and traumatic brain injuries
- Applicable to other protective gear

## Advantages

- Maintain same level of competition with decrease in concussions
- Style and comfort remains intact
- Adaptable for all ages
- Integrates with existing helmet design

## Inventors

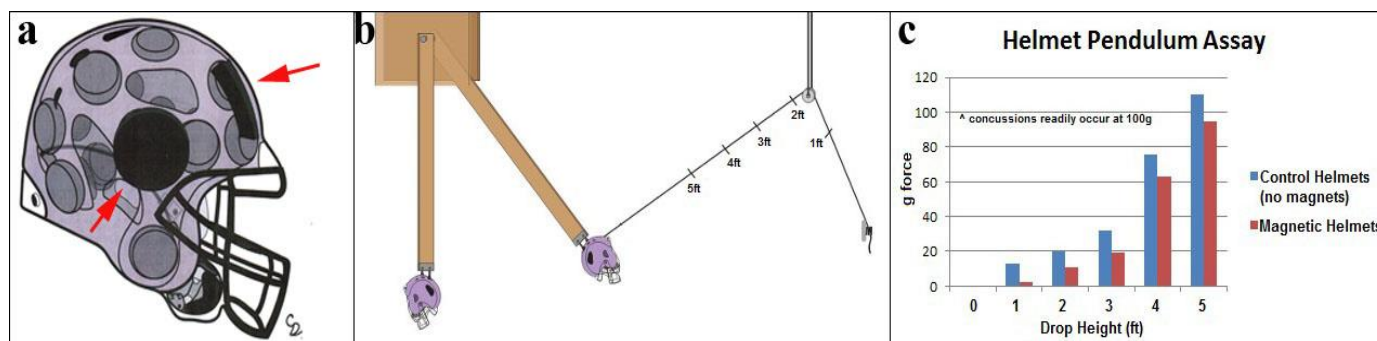
[Raymond J. Colello, D.Phil.](#)

## Contact

Afsar Q. Mir, MS  
Licensing Associate  
[miraq@vcu.edu](mailto:miraq@vcu.edu)  
Direct 804-827-2213

## Technology Summary

This technology uses spatially modulated magnetic fields (SMMF) to lessen the force of impact during helmet-to-helmet collisions. A prototype helmet [a], which incorporates an array of neodymium magnets between the liner and shell, has been tested to determine the efficacy of magnetic repulsion for reduction of impact forces. Using a pendulum assay to collide helmets from varying heights [b], it was found that impact forces between fully weighted helmets were greatly reduced by incorporating magnetic arrays into the helmet design [c]. Since concussions tend to occur when collision forces equal or exceed 100g, helmets that utilize SMMF technology significantly reduce the likelihood of sustaining a serious head injury by up to 80% due to the reduction of g-forces during collisions.



## Technology Status

Additional information about this technology has been published and can be found at the following link:  
<http://www.npr.org/2014/11/23/366166193/could-magnets-help-lessen-the-impact-of-concussions-in-football>

Patent Pending: U.S. rights available.

This technology is available for licensing to industry for further development and commercialization.