

# Study finds 31 per cent concussion drop with Shield-X decal use

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Credit: Simon Fraser University

Eight high-school football teams from across Canada and the U.S. whose players used [Shield-X](#), a helmet decal designed to reduce sharp twisting during impact, collectively reported 31 per cent fewer concussions. They

were part of a new pilot study that tracked more than 300 young football players using decals made of Shield-X membrane during the 2016 football season.

Shield-X was conceived in Simon Fraser University's Head Injury Prevention Lab, housed in the School of Mechatronics Systems Engineering, in 2010. Four years ago, Shield-X Technology Inc. was created to advance the idea to the next level, illuminating a "blind spot" in modern helmet design.

Nearly all helmets are designed, tested, and certified for compression force only. Yet, sharp twisting is known to be one of the key factors behind head injury and concussion, says Daniel Abram, an SFU postdoctoral fellow and Shield-X CTO. The Shield-X [membrane](#) is a micro-engineered layer that can be easily applied to a helmet to improve its performance by reducing the sharp twisting of the head during most impacts.

"The Shield-X membrane can be implemented in different ways to enhance the protection of any headgear," says Abram. The membrane comes in the modular form of a lightweight decal, which can replace conventional decals, such as those used for football helmets, and is applied just like a sticker.

The patented technology can also be seamlessly integrated into the helmet from the inside, Abram says, referring to the new generation of his product, which renders the membrane completely invisible and is suited to cycling, hockey, and skiing helmets.

"The Shield-X decals used in this [pilot study](#) covered approximately 17 per cent of the helmet shell and yet resulted in a 31 per cent reduction in the number of concussions," says Abram. "These results show that the covered locations are among those with the higher risk of receiving

impact."

The most recent pilot study follows seven years of rigorous testing in the SFU lab as well as in independent labs in the U.S. After successful pilot studies with single teams in 2014 and 2015, testing was expanded to include 333 players who were equipped with Shield-X decals for one season.

"The results indicate a substantial improvement in helmet performance," says Abram. "We are continuing to engineer new models and are working to get the technology into the hands—and onto the heads—of more athletes."

Provided by Simon Fraser University

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