



CONCUSSIONS IN FOOTBALL: WHAT CAN WE DO NEXT?

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THE GROWING CONCERN: CONCUSSIONS IN FOOTBALL

Sports concussions are front and center in today's headlines, sparking widespread concern and debate. While most of the media attention is focused on key NCAA and NFL players held out of play, such injuries are common at all levels of football. Additionally, the long-term effects of repeated concussions and sub-concussive trauma are now being recognized as leading factors in the development of chronic traumatic encephalopathy (CTE). CTE can have devastating effects later in life if unchecked, leading to cognitive dysfunction, dementia, and acceleration of neurological deterioration. As the NFL approaches "crunch time" of the playoffs, and NCAA football is reaching its yearly crescendo, which key players will have to sit out a game, a season, or a career due to repeated concussions?

THE SCOPE OF THE PROBLEM: MAJOR AND SUBCONCUSSIVE INJURIES

The rate of experiencing a concussion is approximately 350,000 per year, the vast majority of which occur in football. The impact of concussions extends beyond the immediate injury, encompassing both reduced participation and significant economic costs. Major concussions have been equated with a loss of consciousness, visuospatial and cognitive difficulty, and ante and/or retrograde memory loss. These major concussions have been correlated with significant impact force to the brain as measured with an in-helmet accelerometer. These injuries are obvious by the presence of abnormal behavior and result in removing

the player from contact. Forced rest and a long recovery period are usually prescribed to the player, so the brain can recover from the trauma before a cautious progressive return to play is allowed.

In contrast, lesser brain trauma (i.e. subconcussive head impacts) occurs 30 to 40 times more frequently than a concussion. However, because they produce no obvious or immediate symptoms, they do not result in removal from play. Without removal from play, a period of recovery never occurs, cognitive abnormalities can accumulate; the player plays on, and the hits just keep occurring without rest or recovery.

There is research indicating that subconcussive injury may produce more long-term cognitive damage than major concussion. Therefore, both major concussive and subconcussive injuries are detrimental and need to be avoided. One way to avoid concussive injury is to make rule changes to protect the brain (targeting and others).

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THE ROLE OF EQUIPMENT IN PROTECTING ATHLETES

Another protective strategy is to make changes with helmet equipment. Helmets have been vastly improved over the past decade and the addition of a cover over the helmet has been in use with variable success for the past several years. The most prevalent and older helmet cover is called the Guardian CapXT. It has been endorsed by the NFL to be used in practice. A number of college players wear the helmet cover in practice, but not in games because of its irregular contour that prevents the addition of a team logo. Also, in direct helmet testing, when added to a high-quality helmet, the Guardian CapXT offers little additional protection. In fact, at some angles of impact, the Guardian CapXT actually increases the forces transmitted to the brain instead of absorbing the energy of the impact.

More recently SAFR has introduced a helmet cover with a significant decrease in forces transmitted to the brain. The SAFR Helmet Cover attaches easily to any modern high-quality helmet. It is virtually indistinguishable from a "bare" helmet and can be painted to match any helmet in contour, color and logo.

A COMPARATIVE LOOK: GUARDIAN CAPXT VS. SAFR HELMET COVERS

This newer SAFR Helmet Cover was comparatively tested against the Guardian CapXT by the country's leading helmet testing facility at Virginia Tech. The Guardian CapXT decreased forces from +5% to -15% by absorbing some of the impact. The newer SAFR Helmet Cover decreased forces significantly by diminishing force to the brain by -30% to -80% depending on the angle of impact. This is accomplished by not only absorbing energy but also by deflecting the energy of the impact. This is due to both a unique helmet attachment mechanism and its low friction material.

PROVEN RESULTS: REAL-WORLD TESTING OF SAFR HELMET COVERS

Given the encouraging data from the Virginia Tech Helmet Testing Laboratory, we compared concussions in high school football players in a large metropolitan city school system with and without the use of a SAFR Helmet Cover.

This comprehensive data was compiled on all concussions in the region's 18 public high schools for the 2023 and 2024 football seasons.

In 2023, there were 81 major concussions in their school system without helmet covers. Through the generosity of SAFR and individual donors, SAFR Helmet Covers were provided to all the school systems teams free of charge. While all these schools were provided SAFR Helmet Covers, only 5 schools chose to use them in both practice and games. For a variety of reasons, the other 13 schools were unable to use them, but formed a critically important comparison group of players protected with a standard helmet, but without a helmet cover. This allowed a direct comparison of the number of concussions in 5 high schools who used the SAFR Helmet Covers with the 13 teams without.

The 5 teams utilizing the helmet covers had a decrease in concussions by 48%; a significant difference in comparison to 2023. (31 concussions in 2023 decreasing to 16 in 2024)

In contrast, the other 13 high school teams that did not use the provided helmet covers, had a 34% increase in concussions going from 50 in 2023, to 67 in 2024. To clarify, the schools that chose to use the provided SAFR Helmet Covers experienced a decrease in their concussions by 48%, while the schools that chose not to use them had an increase in concussions by 34%. Such a difference is striking and encouraging that merely providing an inexpensive helmet cover can significantly decrease the risk of concussions in athletes playing football.

The reduction in concussions is significant. However, if one considers that sub-concussive impacts are 30 to 40 times more frequent than a major clinical concussion, the benefits of the SAFR Helmet Covers are further amplified.

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MORE THAN SAFETY: ECONOMIC AND COMMUNITY BENEFITS

One should also not ignore the economic benefit of such protection. It should be noted that the SAFR Helmet Covers can be provided to an entire team for less than the direct economic healthcare cost of treating 1 major concussion. Additionally, their use may decrease the insured liability cost to the school system. Finally, as the improved safety of playing football with a helmet cover becomes apparent to the parents concerned about the long-term injury risk of playing football, the “participation rate”, which has been decreasing over the last few years in contact sports, may improve.



A VISION FOR THE FUTURE: UNIVERSAL ADOPTION OF SAFR HELMET COVERS

The results reported here strongly support the use of SAFR Helmet Covers as an essential part of football equipment going forward.

Concussion data indicates that the most susceptible athletes are young athletes from 12 to 18 years of age. Therefore, the goal of coaches, trainers, and administrators should be to protect their athletes from both major concussion and sub-concussive injury during contact sports. The results reported here, show that wearing a SAFR Helmet Cover could greatly improve protection for athletes playing football. Universal adoption of SAFR Helmet Covers would enable protection from “Pop Warner to the Pros” and potentially avoid any long-term health effects of participating in the sport.



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