

Injury Prevention in the NFL

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Abstract—How the NFL is working to reduce the long and short-term effects of repeated large impacts to the head of NFL players using an increased understanding of the human body and how large forces affect it.

I. INTRODUCTION

OVER the past decade, football has come under scrutiny as the long-term effects of playing a contact sport have been put under the microscope. Notably, the suicides of ex-football players Junior Seau, John Grimsley, and Dave Duerson who donated their brains to science, raised major questions as to how well players were actually shielded from large hits to the head. All three showed signs of degenerative brain disease, which was linked to the large number of concussions they suffered through their careers. Now the NFL is attempting to reduce the damage that is inflicted on players, using both technology and policy to “cushion the blow” the game has on their athletes’ bodies.

II. METHODS

Today the NFL’s helmet manufacturer, Riddell, is working on refining the way the helmet provides protection to the player. In order to do this, modern football helmets are packed not only with shock-absorbing padding like past helmets, but also a bevy of sensors. These sensors provide Riddell with information on every hit to the head a player takes in a game. This will allow them to focus protection on the vulnerable areas, such as the top of the head. Other helmets, such as a new helmet being manufactured by Xenith, are attempting to use new technologies to make better shock absorbers to absorb and redirect impact forces. Utilizing shock absorbers in strategic positions instead of a foam that protects the entire head, but is less effective, is one way they hope to accomplish this.



However, there is not much that can be improved realistically in the physical protection helmets provide. This is where the wealth of sensors comes into play. Every hit can be monitored by medical staff on the sideline. When an

unusually large hit happens, the medical staff can see exactly where the hit happened on the skull, the magnitude of the hit, and remove the player from the game if they deem it necessary.

III. RESULTS

As the type of injury suffered over a long period of time, the results are not immediately verifiable. However, this has been recognized as a real problem for the first time in the almost century-long history of professional football, which is a promising start.

IV. DISCUSSION

It remains to be seen if the emphasis on player safety will continue, or whether this is just a PR project that will last until this current wave of criticism passes.

Reshaping the helmet is problematic, because you trade safety for weight, flexibility, and the bulkier helmet presents a larger potential target and contact surface. A larger helmet also results in a larger blind-spot, which is dangerous, as the player cannot avoid or reduce the impact of a hit they can’t see.

Even if helmets are perfected, it’s the nature of the sport to have violent impacts. With this in mind, a greater understanding on how to prevent long-term damage, and ways to treat already-developed brain damage must be looked into.

However, there are benefits to the current work being done. Regardless of the end result, the NFL is collecting a large amount of data about damage to the brain, and resulting understanding of brain injuries could have impact not only on NFL players, but others with disabilities and head trauma.

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