

Football Helmets and Concussion: Informed and Aware Personal Choice

Schuklenk (2005) noted that where there is risk involved in an activity (e.g. sports or human clinical trials) the participant's informed consent must be obtained. The participant would need to have the capacity to sign signifying agreement that he/she was informed about all aspects including their personal responsibilities and risks of participating in the activity and that he/she is not bound to complete the activity (he/she can freely terminate participation).

However, consider restating the requirements as "informed and aware personal choice" and inject a level of "awareness of personal choice and consequence". One may have been "informed", but that does not necessarily mean one understands the ramifications short/long-term on one's health and well-being by participating in the activity. Furthermore, one may not be aware of other factors such as social influence, economic influence, or religious influence. Not all individuals have the depth of awareness necessary to make choices that have possible longer-term impact. Some individuals are only able to fixate on the immediate gratification aspect. By adding "personal choice", it signifies that the participant chooses to participate in the activity despite potential harm, present or future.

Most people agree there is risk in everything, even stepping off a sidewalk curb. There is inherent calculated risk by choosing to participate in sports. The obvious role of protective equipment in sports is to reduce some risks in personal injury, not prevent harm or injury. However, what if the assumptions about protective gear are not evidence-based? What if the protective equipment is not protecting the participant in sport the way he or she was informed or led to expect? Was the participant truly "informed", "aware", and consciously making a "personal choice"?

Concerns about head trauma and concussions date as far back as 1893 which according to Daneshvar et al. (2011) the first documented use of an early football helmet was in an Army-Navy football game. Football helmets did not become a requirement in the National Football League (NFL) until 1940 (Daneshvar et al., 2011). Recognizing the need for standardized testing and development of protective athletic equipment, the National Operating Committee on Standards for Athletic Equipment (NOCSAE) was formed in 1969 and the first football helmet standards were developed in 1973 (Daneshvar et al., 2011).

The basic NOCSAE guidelines on the football helmet remain in place today. However the concerns in the early days of football were cerebral hematomas, fractures of the head and neck, and death (Daneshvar et al., 2011). The game of football has evolved since, and current concerns are repeated "mild" traumatic brain injuries (concerns over the longterm "stacked" effect) and concussions, some of which are not clearly evident in a player and thus not diagnosed (Daneshvar et al, 2011). When "mild" trauma to the brain is repeated, there may not be any immediately observable effects, but over time, problems may present. It is similar to shaking a baby over a long period of time. Furthermore the effects of brain injuries are specific to the individual.

Helmets were previously designed to aid in reducing injuries stemming from linear acceleration (e.g. skull and cervical fractures) (McIntosh et al., 2011). Quality testing for helmets

such as the North American drop test (Hoshizaki & Brien, 2004) are biased towards testing for linear acceleration. Currently, it has been observed that in concussion cases, there is more likely a larger rotational/angular acceleration component than a linear one. Hoshizaki and Brien (2004) noted that in professional football, "most impacts were glancing blows resulting in linear and angular accelerations" (p. 961). Tests have been developed that reflect this new need but further studies need to be done in order to validate them.

Walter (2014) reported that "no prospective, well-controlled studies show that helmets or third-party attachments prevent or reduce the severity of concussions". In fact, by using third-party attachments, one runs the risk of voiding the helmet's NOCSAE certification and warranty status (Walter, 2014). McIntosh et al. (2011) noted that "current helmets do reduce the forces acting on the head that might lead to these less severe brain injuries, but helmets alone may not be able to prevent rotational motion of the head that is thought to be linked to the stretching of axons in the brain linked to concussion" (p. 1261).

With the benefits of helmets in question and with the dynamics of concussions still being studied, how "informed" is an athlete? All it takes is one hit. Dr. Robert Cantu stated, "It is unlikely, given the present materials, that helmets will solve the concussion crisis...it would be similarly prudent to promote the role of nonequipment-based methods of preventing sport-related concussions. The rules of gameplay should be reviewed constantly and enforced strictly so that risk of injury via violent or illegal actions can be minimized" (as cited in Navarro, 2011, p. 30).

References

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