

## **Media Review: Concussion (2015) Sony Pictures Entertainment**

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### **Introduction**

Based upon true events, the plot of the 2015 multi-award-winning film *Concussion* outlines the discovery of CTE in deceased Hall-of-Fame American Football player and Pittsburgh Steelers' legend, Mike Webster (Omalu, 2017; Omalu et al., 2005). On September 24<sup>th</sup>, 2002 Webster died of a cardiac arrest aged just 50 years. Recognising that elite athletes should not be suffering from such severe cognitive decline at 50-years of age, newly qualified neuropathologist Bennet Omalu (played by Will Smith) examined Webster's brain. Omalu found further evidence of a unique structuring of tau proteins in the micro-pathology of the brains structures (Omalu et al. 2005). Although CTE was not new in 2005, initially seen in boxers (Martland 1928), it was the first documentation of such pathology from team sports, and particularly American Football (Nowinski 2012). Initially named as Chronic Traumatic Encephalopathy in the 1960s by Miller (1966), it grew prominence after the subsequent autopsies in American Football (Omalu et al. 2005; Omalu et al. 2006), which *Concussion* is based upon.

### **Chronic Traumatic Encephalopathy**

The film provides a clear representation and explanation of CTE; a progressive neurological disorder found in people who have a history of concussive and sub-concussive brain traumas (Maroon et al. 2015; Stewart et al. 2015). This includes ex-NFL players, seen in this film through the case studies of Mike Webster, Terry Long, Andre Waters, Justin Strzelczyk and Dave Duerson. Sometimes described as a cross between Parkinson's disease and Alzheimer's, CTE is distinct with those suffering the condition often dying much younger (Omalu 2008) and have a history of repetitive (sub)concussive blows to the head (Maroon et al., 2015).

The film begins with an overview of Mike Webster and gives the viewer a glimpse into the cognitive deterioration and how that manifested in an array of socio-negative behaviours. After such an exceptional athletic career as a Centre, Mike Webster's retirement was characterised by substance misuse, self-mutilation and mental health concerns (Omalu, 2008; 2017). Webster is seen using a taser to shock himself to sleep, he removed his teeth and reattached them with super-glue and was sleeping in his truck. Likewise, later in the film Justin Strzelczyk dies aged 36 years in a head-on car accident while trying to evade police. It is typical for those to be diagnosed with CTE to have a history of psychiatric disorders and other problematic behaviours, such as substance misuse, domestic violence and financial difficulties (Fainaru- Wada and Fainaru, 2013). Reports from family and friends suggest a person suffering from CTE becomes more irritable, angry, apathetic and has an increased temper, represented in the scene where Strzelczyk has an angry fight with his partner (Omalu et al., 2010).

The film portrays the death of Webster as puzzling for Omalu. He is unsure why an ex-athlete, who should be assumed physically fit and healthy, would die at such a young age and experiencing such acute psychiatric decline. But rather than ignoring the issue, he continues to investigate despite pressure to cease. The discovery of CTE in ex-athletes is important as today 110 of 111 ex-NFL players have tested positive for CTE (Mez et al., 2017). Of course, this sample is likely skewed with Stern et al. commenting, 'families are more likely to consider neuropathological examination if they suspect that their loved ones has symptoms related to CTE or another neurodegenerative disease' (2011: 461). That said, Binney & Bachynski (2019) have compiled a medical model which suggests that the numbers of NFL players with CTE highlight culpability from the sport. They argue that a minimum of 10 percent of NFL players will develop CTE, and as many as 100 percent will also, based upon the current proportions of diagnosed players (Binney & Bachynski, 2019).

### **The response to CTE**

Omalu expected the discovery of CTE in a deceased American Football player to be welcomed by the sporting authorities and the American public; after all it would be logical that the NFL would be interested in keeping their athletes healthy after retirement from the sport (Omalu, 2017). However, in the film Omalu discusses his dismay of the social response received to his discovery. What Omalu did not consider was the business risk CTE imposed on the NFL's multi-billion-dollar corporation and the real social positioning of the sport in U.S. society (Bachynski, & Goldberg, 2018). It is suggested in the film that the NFL owns a day of the week, that being the same day that used to be owned by the Church. It is predicted that the 2017 season the NFL will make 14 billion dollars, an increase of 900 million dollars on 2016. The cultural positioning of the NFL has made the Super Bowl 9 of the 10 current largest televised audiences of all time (Omalu, 2017).

In the film, the potential impact of CTE was highlighted by Joseph Maroon (Pittsburg Steelers team doctor and member of the NFL's Mild Traumatic Brain Injury committee) who suggested that, "If just 10 percent of the mothers in America decide that [American] Football is too dangerous for their sons to play, that is it. That is the end of [American] Football". While perhaps a little overstated, Maroon was not necessarily wrong, with Hyman (2009) discussing a decline in team sport participation as a result of young people being less interested in the adult-run dangerous activities of team sports (White and Robinson, 2016). Maroon's comments do, however, highlight the power of the NFL and the sporting institution more broadly.

### **NFL strategies to dismiss the issue**

One of the real benefits of the film is how it highlights many of the strategies deployed by the NFL in order to prevent public health intervention, many similar to those used by the tobacco industry (Bachynski, & Goldberg, 2018). For instance, throughout the film you can see the multiple attempts to defame dissenters (White, 2018). For instance, in one scene Dr Maroon questions Omalu's credibility and expertise when they meet. Later, you see that Omalu is also not taken seriously by NFL officials as they deny him an opportunity to present at their concussion summit. The concussion summit in itself could be seen as a distraction mechanism, to give the illusion they are exploring the issue of traumatic brain injury seriously (White, 2018). Doctors who are situated within sport may be compromised and have conflicting pressures on their ethical standards (Anderson & Jackson, 2012).

Similarly, the viewer can see throughout the film how the NFL dismiss the quality of the research, usually as a product of scientific uncertainty (Bachynski & Goldberg, 2018). They do this through questioning causation, highlighting other currently non-tested variables, and suggesting that an insufficient burden of proof has been achieved (White, 2018). This is particularly easy in the case of CTE, as at present, there is no mechanism for detecting CTE in living persons, meaning it is impossible to get a true indicator of how many people have CTE in sport (Stewart et al., 2015). When the work was finally published in *Neurosurgery*, despite calls for it not to be accepted by some of the reviewers, this was done alongside various commentaries. Valadka (2005) referred to Omalu's work as 'questionable', while Maroon publicly called it 'fallacious reasoning', both highlighted in the production.

A notable scene within the film depicts a discussion on the impact of Omalu et al. (2005) first publication on CTE held in Wycht's office. Wycht (played by Albert Brooks) comments, "Apparently the NFL owns Neuroscience, who knew". This highlights the difficulties faced by Omalu and colleagues in the publishing process, with the NFL trying to block the dissemination of their research. Indeed, the third case of CTE submitted to *Neuroscience* and was initially accepted before being later rejected without explanation (Omalu, 2017). Following the death of Junior Saeu in 2012, a class-action lawsuit was filed by more than 4,500 ex-players of American Football claiming the NFL had 'fraudulently concealed' risk of injury to their brains (Fainaru- Wada and Fainaru 2013).

The film draws to a close on a Congressional House debate held in 2009 on the 'Legal Issues Relating to Football Head Injuries'. Here, NFL Commissioner Rodger Goodell testified on how the organisation were trying to manage and solve the issue of concussion and head injuries in the game,

including through research, rule modification, concussion recognition and management, and finally education (Goodell 2009). Many of which were denounced as delay tactics. The sum of these delay strategies can be to reproduce comment narratives within sport that promote athletes to ignore concussion as an insignificant injury, something Liston et al., (2016) term being ‘head strong’.

### **Recommendation**

This 123 minute Sony production, starring Will Smith, gives an excellent insight into the inception of the concussion debates within American Football, most notably around the finding of CTE in the brains of deceased athletes (Omalu et al., 2005). It gives a strong foundation of the medical knowledge around concussion and CTE, but also shows how concussion is somewhat a social problem (Anderson, 2013; Anderson & White, 2017; Liston et al., 2016). It shows the cultural backlash in U.S. society and the various strategies utilised by the NFL to prevent public health intervention (Bachynski & Goldberg, 2018). It is most certainly a good introduction to the socio-medical issue of concussion for both members of the lay-public and current undergraduate sport or sociology students.

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