

Head Injuries in Rugby - How Much of a Threat do they Pose Towards Health?

Introduction

Rugby is a sport that has been played for many years, stretching back as far as the early nineteenth century where it is said that the game originated during a football match in which William Webb Ellis picked up the ball and ran with it. This was said to have happened in 1823, however there is very little evidence to support this origin story. However, DTU sport rugby claims that in 1863 a handful of boarding schools in England gathered to decide upon a rule set and eventually in 1871, Rugby Football Union as we know it was created. Rugby is a contact sport and despite many alterations of the rules throughout the decades, the physical aspects have been practically untouched. When it comes to contact sports and how physically demanding they are, rugby ranks itself comfortably amongst the most physical sports that can be played. It comes as no surprise to see ESPN ranking it amongst the top 15 most physically demanding sports. However what may be surprising to some, is that sports such as wrestling, mixed martial arts and boxing rank just above rugby in that list. Sports in which the aim is to throw punches, throw kicks, to fight. Considering rugby is a team sport and seeing it placed on a list with sports many perceive to be 'violent', it puts into perspective just how physical the sport really is. Due to the high physical demands of the sport injuries are uncommon to see at any level of the game, and whilst of course injuries occur in essentially any sport, rugby can produce some of the most serious. In a study carried out by McIntosh (2005), it was found that reported injury rates were between 7 and 18 injuries per 1000 hours played. Injury rates also increased with age and level of qualification. This study puts further emphasis on just how physical the game is and whilst many of the injuries are to muscles or bone, in recent times injuries to the brain have been a concern.

Head injuries within rugby can be caused by a range of things: incorrect head placement when carrying out a tackle, scrums collapsing, hitting the ground after being tackled or accidental contact within a ruck. The Drake Foundation stated that medical figures released by the Rugby Football Union (RFU) in 2020 revealed that 20% of professional rugby union players in England suffered concussion during the 2018-19

season. It is concerning to see these statistics at the highest level of the sport, and what is even more concerning is that when compared to the 2017-18 season this was in fact a 16% increase. This essay will look to explore the relationship between rugby and concussions, as well as exploring how concussions potentially link to further health concerns and complications. Possibilities and potential means to lower concussion rates will also be explored, in order to determine whether the game can really continue to survive as pressure begins to mount from various areas. It is an important topic as it relates to the health and safety of those who participate in the sport and the survival of the sport itself. The sport is hugely popular from various points of view; spectators enjoy watching whether it be in a stadium or the local field, players enjoy the competitive and inclusive nature and coaches take the time to help their teams everyday or on the weekend. It would be devastating for millions of people across the globe if rugby as we know it were to cease or be altered beyond the identity we know and love, therefore it is crucial to understand the risks that come with the sport and put the correct measures in place to ensure its survival.

Development of ideas and quality of argument

As mentioned previously, due to rugby being a highly physical contact-sport, injuries are inevitable. However very few injuries have the same effect as concussion, whether it be short or long term. Whilst concussion is the most common type of mild traumatic brain injury, it can have serious consequences (Charles, HT 2013). They are not just confined to professional athletes either, as concussions are frequent in all age groups and in a variety of settings, one being rugby. It is absolutely crucial that diagnosis is made as the importance of accurate and timely recognition and management stems from the consequences of misdiagnosis or faulty management, which can lead to disability or potentially death (Charles, HT 2013). In this section of the investigation, I will be exploring and discussing the frequency of concussion, the short term effects of concussion, the long term effects and how it is identified during a rugby match.

Over the short term, the symptoms of concussion come to no surprise to those who frequently participate in contact sport. Once the initial head contact has been made, symptoms of concussion that instantly appear include brief: loss of consciousness, periods of memory loss, disturbance in vision and a period of confusion (NHS Inform, 2021). If a brain scan is carried out after the incident, concussion is only diagnosed if the scan returns as being normal i.e no bleeding or swelling of the brain. Initially, children between the ages 6 - 9 are highly unlikely to experience concussion from rugby as tackling is only introduced between the ages of 10-11. However there is no inbetween, and a 10 year old child would have to jump straight from tag rugby towards a

highly physical game. One key to avoiding concussion is correct head placement when tackling, however after just transitioning from tag rugby it becomes very difficult for a child to learn and adjust to the new rules and techniques. The increased likelihood that concussion can occur from poor technique is something that coaches must address early on, as the initial symptoms of concussion for players aged 10 to 11 can be extremely frightening. Not only this, but if a player was to experience concussion straight after the transition from tag rugby to tackling, psychologically they may end up not wanting to participate in rugby anymore. Furthermore these children will have just been transitioning from primary school to secondary school and the last thing that they need is to miss up to two weeks recovering from concussion. Although techniques are naturally improved as children get older, this has no effect on rates of concussion as children tend to be more lenient towards becoming more physically involved in the game. Both rugby league and rugby union feature as major sports within the school sport curriculum in the UK. A systematic review from 2015 consisting of 25 studies carried out in England; 20 rugby union, 3 rugby league and 2 unspecified found that the incidence of child and adolescent match concussion ranged from 0.2 to 6.9 concussions per 1000 player-hours for rugby union. The rates were higher for rugby league albeit a smaller study pool, with a range of 4.6 to 14.7 concussions per 1000 player-hours. There is significant risk of concussion in children and adolescents playing rugby league and rugby union, as evident from the studies partaken in the systematic review. Experiencing the short term effects of concussion can be enough to stop a child from playing rugby or participating in sport altogether, however the effects could also impact their cognitive function negatively albeit in a short time frame as well as their school attendance.

It is widely known and accepted that the effects of concussion are mostly present over the short term period post head trauma, however in recent times more research is being put into the potential long term risks of frequent incidences of concussion. Former Welsh Rugby Union international Dafydd James recently revealed that he has been diagnosed with early onset dementia, whilst it is not uncommon to see retired athletes succumb to such illnesses alongside the general public, receiving such diagnosis at the age of 47 is something of a concern (ITV, 2023). Not only this, but Dafydd also joins a group of ex-sportsmen and women taking legal action after claiming they suffered brain injuries during their sporting careers. The number of people in this group has risen to 380, featuring 100 rugby league players and 40 rugby union players. Another more notable example is former Welsh international Ryan Jones, who captained his country on numerous occasions. In July of 2022 he revealed to the public that he was diagnosed with early-onset dementia, at the age of just 41 years old (Sky Sports, 2022). Unlike Dafydd James, Ryan Jones was quick to call out for the sport to take more preventative measures, essentially using his diagnosis as a warning of what can happen even at the highest level of the game. Research into the long term effects of

concussion is subtle and has only been brought to attention due to former professional rugby players such as Dafydd James and Ryan Jones. However a systematic review written in 2018 by Joice Cunningham which consisted of 6 studies including 672 retired male rugby players, found that a self-reported history of concussion was associated with small to moderate neurocognitive deficits in retired rugby players. This included areas such as cognitive flexibility, complex attention and executive function. A UK study published in the Journal of Experimental Physiology found that the brain function and cognitive ability of a team of rugby players declined over the course of a single season (Taylor, 2021). The study also found that players had reduced blood flow to the brain, particularly those who experienced more collisions. A team of professional Rugby Union players were less able to remember, carry out mental tasks, and formulate ideas as the season went on, adding to growing evidence that head collisions in some sports could be making players more susceptible to neurodegenerative diseases in later life. This shows that although the long term effects of concussion can not be 100% linked towards future health problems, there is most definitely a link between the two. This continues to be proven as more former athletes tell their stories.

Without undergoing any brain scans, it is extremely difficult to determine whether a player who has suffered head trauma is concussed or not. It is crucial that any player who is concussed receives the correct treatment and is removed from the field of play. The fact that rugby is such a competitive sport can sometimes be dangerous, as players who are concussed can deny their symptoms in order to stay on the field. Continuing to play with a concussion can have multiple negative effects, not only to a players performance and health, but the risk of injury increases too. A four season long study (2012/13 - 2015/16) found that not only did rates of concussion increase, but the injury risk after a concussive injury was 38% higher when compared to non-concussive injury (Rafferty et al, 2019). This is most likely due to the short term symptoms such as confusion and impacted vision, which would instantly give those players a disadvantage on the playing field and less time to react to impact. Thankfully, there are worldwide protocols in place to ensure that cases of concussion can be identified and players can be seen as quickly as possible. Aimed towards children and adolescents up towards the age of 19, the Welsh Government constructed a 6 page guideline with aims to help people identify, manage and assess instances of concussion. This resource can be used by schools, local rugby clubs or the general public. The main inspiration for this resource was an incident that took place in 2011 which saw 14 year old Benjamin Robinson pass away during a rugby match as a result of a double concussion, now known as second impact syndrome (SIS). His death most likely could have been avoided, had someone been able to recognise the signs of his initial concussion and removed him from the game. It is unfortunate that guidelines were only produced after the death of a schoolboy. The Welsh Rugby Union has since introduced multiple guidelines and protocols in order to tackle the issue, including a resource created in

2016 which can be used for the community and professional game. The resource was developed utilizing guidelines produced in the 2012 Consensus Statement on Concussion in Sport. The 15 page resource contains vital information such as the symptoms of concussion, how to identify concussion and the correct stages of recovery following a concussion. It can be accessed by anyone.

Practical Implications and Suggestions

There is absolutely no doubt that concussion is a serious issue within rugby, with concerns over the health of players over both short and long term as well as minor instances of death. Whilst it is positive to see that federations throughout World Rugby have specific concussion protocols put in place for the protection of players, whilst this may help to prevent more instances of second impact syndrome it does not tackle the issue as a whole. These protocols are continuing to be developed as more research is being put into the subject and it is very easy for players who suffer a minor concussion to avoid being taken away from the field of play as some concussion assessments only consist of 2 to 3 simple questions. Therefore I feel it is important to have more of a focus on educating the rugby community about just how serious concussion is as some players may not see it as the potentially life threatening issue that it is, leading them to continue to play whilst concussed or not follow the recovery stages appropriately. The Welsh Rugby Union is the voice of rugby in Wales and therefore they should be at the forefront of educating players about concussion from a young age. Whilst they have created resources in the past, perhaps there should be more of an educational focus centered towards children who are in the transitional period from tag rugby to tackling. This could potentially be carried out in schools with a focus of year 7 and year 8 pupils who participate in rugby, perhaps in physical education lessons or as part of their extra curricular activities. This, as well as the education of correct techniques and safety elements of the game, could help to ensure that not only are the players aware of when they are potentially concussed but could also help them to avoid scenarios which could lead to concussion. Concussion is something that is difficult to avoid in a sport such as rugby and ultimately it is inevitable, however former players such as Ryan Jones who have been diagnosed with early-onset dementia have stated that they would rather see more protocols and safety measures introduced instead of disbanding the sport altogether. For those with fears of concussion or those who have suffered it, there are other options available in order for them to continue playing the sport that they love. Thankfully, tag rugby is a variation of the sport that doesn't only have a child centered focus, as the WRU is pushing for more adults to participate in it. In 2008, the Wales Touch Association (WTA) was officially recognised as a sport by the Welsh Sports Association. This brand of the sport allows players to participate in a variety of leagues,

tournaments and even a World Cup. Essentially, the physical elements of the sport are removed yet the competitiveness, team spirit and rewards remain the same. Not to mention that it is a highly inclusive sport in which men and women can both play on the same team. With the growth of touch rugby in Wales and the opportunities present, the initial stigma of playing touch rugby as an adult has been wiped out and there is more opportunity for players to avoid the worries of concussion related injuries. Continued growth of touch rugby could see it become a highly popular sport. This way, rugby union and rugby league can continue as they are with touch rugby being another option for those concerned about their safety.

Conclusion

To summarize, it is indeed clear to see that head injuries in rugby do pose a major threat towards health mainly in the forms of concussion. Whilst there is certainty that concussion does have a short term effect as found by the studies focusing on professional rugby players and high school rugby players, links between head trauma and long term health risks are still being established however the small pieces of evidence are there such as the recent statements from former professional athletes such as Ryan Jones and Dafydd James. With a high contact sport such as rugby, avoiding these injuries is always going to be difficult and the issue as a whole may never be resolved however there is potential that rates can be lowered. The correct protocols are in place now more than ever to ensure that the issue is identified and that players are provided with appropriate recovery stages. In order to lower the risk of concussion, education can be a key asset. The WRU is seen as the main ambassador for rugby in Wales and if they want to continue to have the sport being played, they must be more vocal about concussion towards children from a young age. That way, they are instantly aware of the risks, the symptoms and how to avoid it. With the continued growth of touch rugby in Wales, which will no doubt one day be involved in school curriculums on the same level as rugby league and rugby union, there is an option for children or those who have already suffered concussion to pursue a safer brand of the sport whilst also enjoying the core elements that rugby has to offer. The sport does not have to die, but the risks of the sport can become more vocalized in order for it to be seen on the same page as every other sport in terms of injury risk.

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STUDENT FEEDBACK FORM

This section details the *extent* to which the assessment criteria are demonstrated by you, which in turn determines your mark. The marks available for each category of skill are shown. Lecturers will use the space provided to comment on the achievement of the task(s), including those areas in which you have performed well and areas that would benefit from development/improvement.

Generic Assessment Criteria	Marks available	Marks awarded
1. Engagement with Literature Skills		
	20	
2. Knowledge and Understanding Skills		
	20	
3. Cognitive and Intellectual Skills		
	30	

4. Practical Application Skills		
	20	
5. Transferable Skills for Life and Professional Practice		
	10	

Assessment Mark (Assessment marks are subject to ratification at the Exam Board. These comments and marks are to give feedback on module work and are for guidance only until they are confirmed.)	Late Submission Penalties (tick if appropriate)		%
	Up to 1 week late (40% Max)		
	Over 1 week late (0%)		