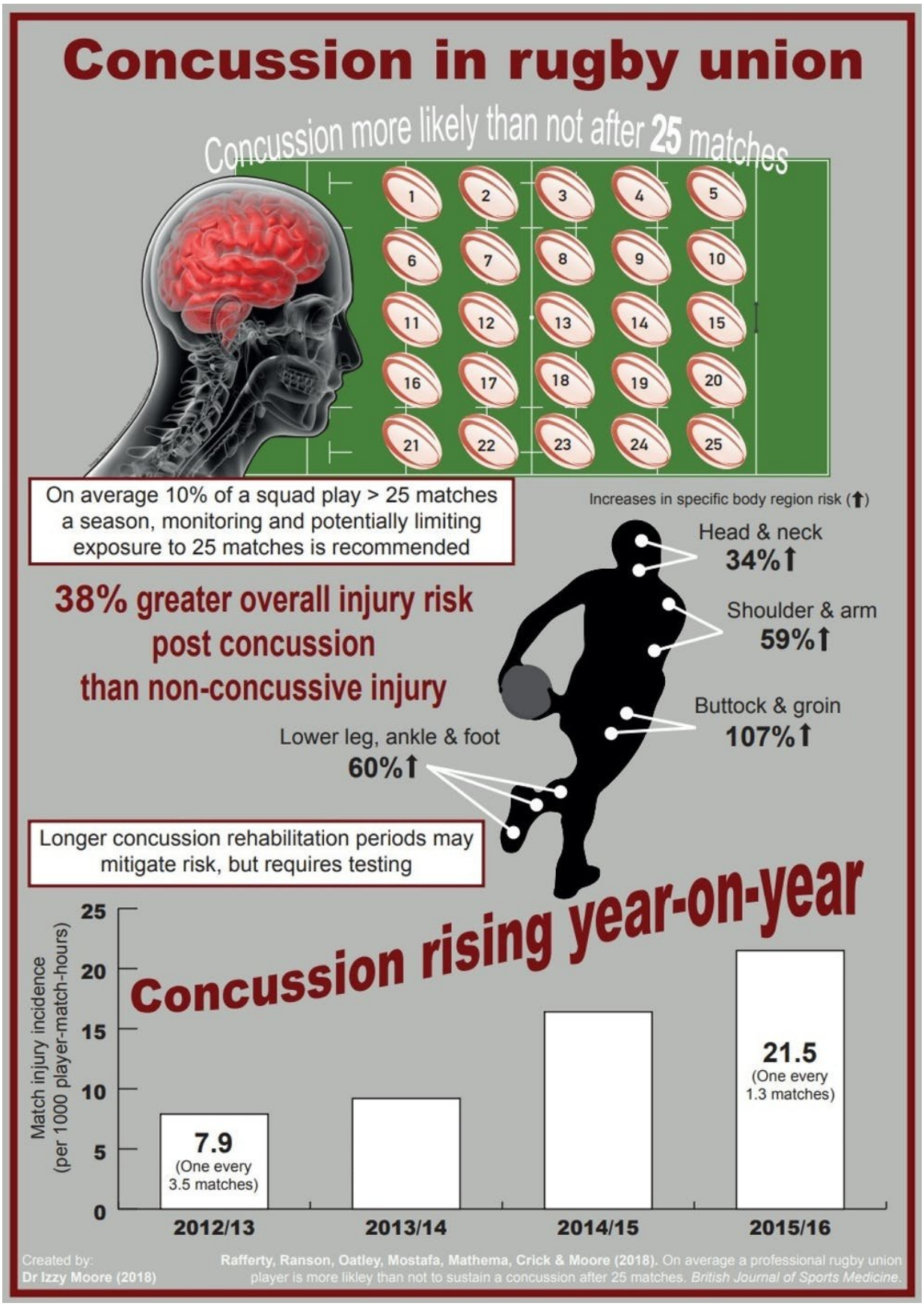
Rugby players more likely than not to sustain a concussion after 25 matches in a season

March 15 2018, by Isabel Moore


Concussion in rugby union
Concussion more likely than not after 25 matches
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On average 10% of a squad play > 25 matches a season, monitoring and potentially limiting exposure to 25 matches is recommended
Increases in specific body region risk (⬆)
Head & neck
34%⬆
Shoulder & arm
59%⬆
Buttock & groin
107%⬆
Lower leg, ankle & foot
60%⬆
38% greater overall injury risk post concussion than non-concussive injury
Longer concussion rehabilitation periods may mitigate risk, but requires testing
Concussion rising year-on-year
Match injury incidence (per 1000 player-match-hours)
25
20
15
10
5
0
7.9
(One every 3.5 matches)
21.5
(One every 1.3 matches)
2012/13
2013/14
2014/15
2015/16
Created by:
Dr Izzy Moore (2018)
Rafferty, Ranson, Oatley, Mostafa, Mathema, Crick & Moore (2018). On average a professional rugby union player is more likley than not to sustain a concussion after 25 matches. British Journal of Sports Medicine.

Concussion risk. Credit: Isabel Moore, Author provided

Concussion is one of the biggest problems facing both rugby union and league. Rates of the traumatic brain injury in rugby union have been rising since the 2012/13 season, going from one concussion every 3.2 matches, to one concussion every 1.2 matches in the 2015/16 season.

It has become such a problem that we have now found players are more likely than not to sustain a concussion after 25 matches in a single season. This rate – which came from an analysis of the 2015/16 rugby union data – was three times higher than the second most frequent injury , thigh haematoma ("dead leg").

The increase in concussion rates is partly explained by the introduction of the head injury assessment (HIA) – a series of off-field checks used by elite teams to help identify players who have concussion – and concussion education programmes that teach players, referees, coaches and medical practitioners about the identification, management and misconceptions of concussion. These have provided valuable time within a match to diagnose concussion, rather than relying on making on-field decisions, and helped to raise awareness and improve knowledge of concussion.

But the continued increase in concussion rates we found suggests that multiple other factors may be at play, too. For example, concussion rates are higher on grass than they are on artificial turf, so surface and match tactics may be a cause. Tackling a player at shoulder height or above (a high tackle) leads to greater risk of a player having a HIA. Yet tackling high is often a tactic used to prevent the opposition from being able to

offload the ball – though yellow cards have been introduced for high tackles in an attempt to reduce this specific risk.

The data explained

Our statistical analysis looked at how much accumulated match exposure was needed to tip the probability of concussion above 50%. Imagine flipping a coin where the chances of heads or tails is 50/50. In the case of rugby player concussion, when you flip the coin after 25 matches you have a greater chance of getting a heads (concussion) than a tails (no concussion).

Given that 10% of a squad typically play more than 25 matches a season, this exposure level is particularly worrying. At present, the maximum number of matches a player can play in single season is 32. However, with longer seasons on the horizon, more players may be playing more matches, and potentially increasing their concussion risk. Plans have been put forward to extend the English Premiership 2019/20 season by an extra one or two months – although this was not well received by players or the Rugby Player Association.

On top of concussion itself, there is now a body of evidence from football as well as rugby union showing that concussion leads to a greater subsequent injury risk (47% and 60% respectively, compared to 38% in our study). Pooling the statistics together, the risk of any type of injury after concussion is 48% greater than the risk of injury after any non-concussive injury (for example, shoulder dislocation, thigh haematoma). Injuries following concussion also occur sooner than injuries after non-concussive injuries.

Back to the pitch

Rugby union currently operates a return to play protocol that outlines the mental and physical activities which must be undertaken by a player before they return to full contact rugby. The players are supervised by medical practioners and must be symptom free during each 24-hour stage of the protocol to be able to move onto the next step.

However, our finding raises the question whether the protocol is enough to combat the increased risk, or if there should be a longer rehabilitation period. At present, a player at elite level can be concussed on Saturday and be available for selection the following Saturday.

It should be said that this minimum six days is a rarity rather than the norm in England and Wales at least. The Welsh Rugby Union reports that clubs in Wales do adhere to this protocol, with players on average taking ten days to return to play. This is also the case with the English clubs, who have an average of 13 days and good adherence to the protocol.

Unfortunately, researchers still know very little about concussion-specific rehabilitation. Still, our data – and previous work – suggests that the ten days does not seem to help reduce subsequent injury. A longer, multifaceted rehabilitation period would ensure large increases in the amount of training load (for example, running distance, intensity, minutes playing rugby) players are exposed to do not occur. Such increases in workload have been linked to greater injury risk.

The concussion statistics do not paint a pretty picture of the risks associated with rugby union. However, rugby union governing body World Rugby does have a track record of using scientific findings to inform policy and law changes within the game – for example, the introduction of the HIA and yellow cards for high tackles. We can only hope they take our research and use it to consider whether the return to play protocol, and season lengths, are the best for player welfare.