

**Written evidence submitted by David Silver MCSP, with Dr Nicola Brown & Dr Stephen Patterson (St Mary's University, Twickenham)**

**UK Parliament - Digital, Culture, Media and Sport Committee (DCSM)**

**Concussion in Sport Inquiry**

1. My Name is David Silver MCSP and I have spent the last eight years leading PhD concussion research at St. Mary's University Twickenham within youth community Rugby Union. This has culminated in a research collaboration with the Rugby Football Union (RFU) to help validate and direct concussion education and behaviour change programmes.
2. As a youth sports Physiotherapist for over 15 years, and latterly a concussion consultant, I have worked with countless head injury patients and attempted to both assess and manage the consequences.
3. When I embarked on this career, player, parent and coach understanding of concussion was poor, as was the general public's appreciation of its impact. I, and my colleagues, struggled with impractical and unsubstantiated assessment tools, wide-scale under-reporting of symptoms and next to no specific evidence base from which to make informed clinical decisions.
4. Parents would be left without substantive advice, coaches lacking awareness would make key decisions and in hindsight, player health was often put at risk.

Despite the challenges this presented to those charged with welfare, this was the norm reflected across the Rugby world.

5. Many things have changed in the intervening years as exposure of head injury management in sport has risen dramatically. High profile cases at the elite level and tragically, avoidable, youth deaths have brought into sharp focus one of the greatest threats to sporting participation.
6. Heightened public attention has also driven a rise in academic investigation. The resultant growth in evidence has begun to shape our understanding of both the pathophysiological and behavioural features and how best to assess and treat concussion. Despite these positive steps, many considerable gaps in knowledge remain.
7. The majority of investigation to date has focused on elite level players. However, participation at community levels represents the overwhelmingly larger population, of which young players represent the majority. The impact of concussions on these cohorts is far less documented.
8. The resultant lack of youth concussion understanding is heightened by the acceptance that young people are more likely to sustain concussion,(1) experience symptoms for longer,(2) and can suffer 'Second Impact syndrome' with potentially fatal consequences.(3) Young players therefore represent the most vulnerable playing population in the UK and worldwide.

9. This dearth of evidence and the challenge it presents to parents, coaches and medics motivated me to embark on research attempting to make the game I love, safer for young players.
10. To address the lack of epidemiological understanding within youth community Rugby and to trial the novel use of an assessment tool, my colleagues and I undertook four years of data collection from 489 8–18-year-olds. The investigation titled 'Reported concussion incidence in youth community Rugby Union and parental assessment of post head injury cognitive recovery using the King-Devick test' was published by the Journal of Neurological Sciences in 2018.(4)
11. The publication represents the largest investigation of reported head injury incidence in youth UK Rugby Union to date. The observed match related head injury incidence of 12.7 per 1000 match hours (95% CI 9.2 – 17.5) was considerably higher than that of previously published studies.(5)(6)
12. Since this publication, the concussion research community has moved closer to establishing consensus on the risks of concussion that elite level Rugby presents. This has not been the case at community and youth levels where ambiguity remains.

13. Several barriers have hampered establishing this key metric; The lack of practical, pitch-side concussion diagnostic tools at community levels leaves its diagnosis shrouded in uncertainty.(7)(8) Assessment therefore remains a primarily subjective process. This places great pressure on those conducting assessments when asked to form a binary diagnosis. As a result, the term 'suspicion' of concussive symptoms has become the basis for removal from play.(9) With no objective pitch-side diagnostic tools, those responsible for the welfare of players at grass roots levels have little to substantiate decisions.

14. This challenge is compounded by the reliance on player symptom reporting. Unlike elite levels where multiple match officials and video replays can be employed, head injury recognition at community levels relies heavily upon player reporting.

15. Under-reporting of concussion symptoms has been a consistent barrier to risk reduction across a range of sports and levels.(10) The risks of under reporting are heightened in contact sports as second impact syndrome has been linked to fatal consequences, and the long-term effects of repeated concussion remain poorly defined. Understanding of the drivers behind concussion reporting is growing, but this complex psychosocial research field is in its infancy. Greater research is therefore required to direct effective risk reduction strategies.

16. Risk reduction strategies have been employed by all major Rugby playing nations under the guidance of World Rugby, the games global governing body. Such strategies have commonly been based on educating players and key stakeholders to bridge a perceived gap in understanding.(11) To establish the efficacy of such interventions, researchers commonly first establish the injury risk, administer the intervention, and then monitor for change in injury frequency.(12) Due to the limitations in concussion assessment and the reliance on symptom reporting in community rugby noted above, this method is flawed. (Fig.1 below) Indeed, if concussion awareness or behaviour change interventions are successful, reported injury rates may increase.

Figure 1. The inter-dependant barriers to improved concussion risk reduction within community level sports.



17. To mitigate the challenges within community level Rugby that poorly defined injury risk presents, such as a barrier to conventional risk intervention evaluation, other ways of assessing intervention effectiveness are required. Without this, risk reduction remains unsubstantiated and potentially ineffective.

18. To this end, St Mary's University, Twickenham and the RFU have collaborated to develop the Rugby Union Concussion Knowledge and Attitude Survey (RUCKAS). The survey presents a means of gaining pre and post-intervention information that can then be used to direct future risk reduction strategies. Despite the inevitable ill-defined gap between stated intentions and actual behaviour, specifically designed surveys of this nature present the most practical means of gauging efficacy when injury incidence rates are unsettled. It is hoped that the youth community Rugby player understanding gained can then inform the content of concussion risk reduction strategies the RFU delivers.

19. In order to make rugby as safe as possible continued high-level research is essential. It is therefore pleasing to see the RFU and World Rugby encouraging and collaborating with independent research groups like mine to this end. When research reveals a clearer understanding of the short and long term risks that sports related head injuries present, players, parents coaches and all those who appreciate the benefits of sports like rugby, can make truly informed decisions. In addition, continued investment in research driven assessment, management and education programmes that are commonly sport specific, could be standardised across governing bodies. This would reduce ambiguity for parents, coaches, teachers and participants and ensure continuity of best practice. We hope this enquiry will highlight some of the challenges described above and reveal future interventions that may protect participants whilst promoting the wellbeing sport undoubtedly delivers.

We thank you for the opportunity to contribute to this inquiry.

Yours sincerely,

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