

Executive Summary to Response to the UK CMOs Physical Activity Expert Group (PAEG)

This executive summary sets out the main points covered in the response of Professor Allyson Pollock and Professor Eric Anderson, on behalf of the Sport Collision Injury Collective, to the undated response of the UK Physical Activity Expert Group to the Collective's open letter of 1st March 2016.

The main points covered are:

1. Rugby union and rugby league are the most commonly played collision sports offered in school as part of the physical education curriculum in England. (1) Experts agree that rugby has high risks of injury compared with other team sports. (2-6) Rugby has a higher rate of concussion than any other youth team sport. (6) The risk of injury in youth rugby increases with age, although not linearly, and is high across all age ranges within youth rugby. (7-9)
2. Injuries in rugby, including serious injuries which can occur at any body site, are most likely to occur during collision, especially during the tackle. (7, 9-14)
3. There needs to be a clear distinction drawn between the benefits arising from participation in physical activity to those specifically from sport, including rugby. This distinction should be maintained as corporate sporting bodies which make the rules which most schools adopt are subject to commercial pressures. (15, 16)
4. An absence of "complete person-hours measures of exposure in children that includes, school, recreational, training, game and play based rugby" as cited by the Chief Medical Officers' Physical Activity Expert Group (PAEG) should not be used as grounds for failing to take a cautionary approach by removing the tackle from school rugby union and rugby league.
5. Evidence suggests that many schools make rugby a compulsory sport. (17, 18) There is also evidence that teacher training in the skills of rugby are lacking as is concussion awareness training. (19, 20)
6. There are currently no injury surveillance initiatives in the youth game either in schools or clubs which publish data available to the public or researchers.
7. Recent research has highlighted: the high force of head impacts endured by 11 year-olds in rugby league (21); that rugby related injury emergency department attendances in the US are on the rise in particular head and face injuries (22); that girls take longer to recover from concussion than boys (23); that a history of concussion negatively impacts on a person's life chances across a range of social and educational measures (24); that concussion is predictive of violent behaviour and violent injury in adolescents (25); that head injury is associated with an increased risk of dementia and Alzheimer's disease (26); and that there is strong evidence from youth ice-hockey that rule changes disallowing collision have a dramatic effect in lowering concussion risk (27).
8. Within the adult community game there is still likely to be an underreporting of concussion due to a lack of player awareness and unwillingness among players to report symptoms. (28)

- There is little evidence available to support the effectiveness of concussion education and prevention programmes in existence across various country Rugby Unions. (29)
9. Injuries from rugby result in significant time off school away from education. (30). The numbers playing rugby drop dramatically at 18 years. (31) Around a fifth of the reasons given for giving up rugby by young people concern injury or disillusionment with the game. (32)
 10. The United Nations Convention on the Rights of the Child (Article 19) states that governments have a duty to protect children from risks of injury. (33) This is an international legal obligation of the United Kingdom. Children must be allowed to play and be active and responsible authorities have a duty to prevent them from unnecessary harm while doing so.
 11. There is a need to involve children in the planning, designing and monitoring of play policies and activities relevant to play and leisure, at the community, local and national levels.
 12. The conclusion of this response to the PAEG is to repeat the request to the individual country's chief medical officers (CMOs) to advise in accordance with the evidence and to the responsible state ministers to remove the tackle and other forms of harmful contact such as the scrum, ruck and maul from school rugby on the basis of the evidence available.

1. Department for Education. GCSE PE activity list2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/447738/GCSE_activity_list_for_PE.pdf.
2. Fuller CW, Ashton T, Brooks JH, Cancea RJ, Hall J, Kemp SP. Injury risks associated with tackling in rugby union. British journal of sports medicine. 2010;44(3):159-67.
3. Burger N, Lambert MI, Viljoen W, Brown JC, Readhead C, Hendricks S. Tackle technique and tackle-related injuries in high-level South African Rugby Union under-18 players: real-match video analysis. British journal of sports medicine. 2016;50(15):932-8.
4. Hendricks S, O'Connor S, Lambert M, Brown J, Burger N, Mc Fie S, et al. Contact technique and concussions in the South African under-18 Coca-Cola Craven Week Rugby tournament. European journal of sport science. 2015;15(6):557-64.
5. Quarrie KL, Raftery M, Blackie J, Cook CJ, Fuller CW, Gabbett TJ, et al. Managing player load in professional rugby union: a review of current knowledge and practices. British journal of sports medicine. 2017;51(5):421-7.
6. Pfister T, Pfister K, Hagel B, Ghali WA, Ronksley PE. The incidence of concussion in youth sports: a systematic review and meta-analysis. British journal of sports medicine. 2016;50(5):292-7.
7. Freitag A, Kirkwood G, Scharer S, Ofori-Asenso R, Pollock AM. Systematic review of rugby injuries in children and adolescents under 21 years. British journal of sports medicine. 2015;49(8):511-9.
8. McIntosh AS. Rugby injuries. Medicine and sport science. 2005;49:120-39.
9. Bleakley C, Tully M, O'Connor S. Epidemiology of adolescent rugby injuries: a systematic review. Journal of athletic training. 2011;46(5):555-65.
10. Kirkwood G, Parekh N, Ofori-Asenso R, Pollock AM. Concussion in youth rugby union and rugby league: a systematic review. British journal of sports medicine. 2015;49(8):506-10.
11. Papalia R, Tecame A, Torre G, Narbona P, Maffulli N, Denaro V. Rugby and Shoulder Trauma: A Systematic Review. Translational medicine @ UniSa. 2015;12:5-13.
12. Gardner A, Iverson GL, Levi CR, Schofield PW, Kay-Lambkin F, Kohler RM, et al. A systematic review of concussion in rugby league. British journal of sports medicine. 2015;49(8):495-8.

13. Gardner AJ, Iverson GL, Williams WH, Baker S, Stanwell P. A systematic review and meta-analysis of concussion in rugby union. *Sports Med.* 2014;44(12):1717-31.
14. Williams S, Trewartha G, Kemp S, Stokes K. A meta-analysis of injuries in senior men's professional Rugby Union. *Sports Med.* 2013;43(10):1043-55.
15. Pollock AM and 16 other members of the Child Sport Participation Workshop. Written submission to the House of Commons Health Committee Inquiry into the impact of physical activity and diet on health2014. Available from: http://www.allysonpollock.com/wp-content/uploads/2014/12/AP_2014_ChildSport_HSC_Inquiry_2014.pdf.
16. Pollock AM, Kirkwood G. Removing contact from school rugby will not turn children into couch potatoes. *British journal of sports medicine.* 2016.
17. Nyiri P. Re: The unknown risks of youth rugby. *BMJ [Internet].* 2015; 2015;350:h26 Available from: <http://www.bmj.com/content/350/bmj.h26/rr-9>.
18. White A, Anderson E. Banning the schools' rugby tackle: academic initiative and inept governmental response to protect children from compelled child abuse. *Sport and Politics Study Group Annual Conference, Manchester Metropolitan University, Thursday 16 and Friday 17 March 2017*2017.
19. Oxfordshire Rugby Football Schools Union. Training Audit 20152015. Available from: <http://www.oxonrugbyschools.co.uk/resources/ORFSU%20Training%20Report%20Dec%202015%20.pdf>.
20. Shibli S, Moore R, Barrett D, Edmondson L, Christy L, Millar R. All Schools Monitoring Report - Autumn Term. Sheffield Hallam University. Sport Industry Research Centre., 2015.
21. King D, Hume P, Gissane C, Clark T. Head impacts in a junior rugby league team measured with a wireless head impact sensor: an exploratory analysis. *Journal of neurosurgery Pediatrics.* 2016;1-11.
22. Sabesan V, Steffes Z, Lombardo DJ, Petersen-Fitts GR, Jildeh TR. Epidemiology and location of rugby injuries treated in US emergency departments from 2004 to 2013. *Open Access Journal of Sports Medicine.* 2016;7:135-42.
23. Miller JH, Gill C, Kuhn EN, Rocque BG, Menendez JY, O'Neill JA, et al. Predictors of delayed recovery following pediatric sports-related concussion: a case-control study. *Journal of neurosurgery Pediatrics.* 2016;17(4):491-6.
24. Sariaslan A, Sharp DJ, D'Onofrio BM, Larsson H, Fazel S. Long-Term Outcomes Associated with Traumatic Brain Injury in Childhood and Adolescence: A Nationwide Swedish Cohort Study of a Wide Range of Medical and Social Outcomes. *PLoS medicine.* 2016;13(8):e1002103.
25. Buckley L, Chapman RL. Associations between self-reported concussion with later violence injury among Australian early adolescents. *J Public Health (Oxf).* 2017;39(1):52-7.
26. Li Y, Li Y, Li X, Zhang S, Zhao J, Zhu X, et al. Head Injury as a Risk Factor for Dementia and Alzheimer's Disease: A Systematic Review and Meta-Analysis of 32 Observational Studies. *PloS one.* 2017;12(1):e0169650.
27. Emery CA, Black AM, Kolstad A, Martinez G, Nettel-Aguirre A, Engebretsen L, et al. What strategies can be used to effectively reduce the risk of concussion in sport? *British journal of sports medicine.* 2017.
28. Roberts SP, Trewartha G, England M, Goodison W, Stokes KA. Concussions and Head Injuries in English Community Rugby Union Match Play. *American Journal of Sports Medicine.* 2016;Published Online October 17 2016. DOI: 10.1177/0363546516668296.
29. Fraas MR, Burchiel J. A systematic review of education programmes to prevent concussion in rugby union. *European journal of sport science.* 2016;16(8):1212-8.
30. Nicol A, Pollock A, Kirkwood G, Parekh N, Robson J. Rugby union injuries in Scottish schools. *J Public Health (Oxf).* 2011;33(2):256-61.
31. Mactaggart M. RFU Insights. A paper examining participation, drop out and recommended solutions to aid in retaining and bringing back 16 to 24 year old rugby players. Available from: http://www.academia.edu/8207408/Rugby_Player_Participation_Insights.

32. Lee AJ, Garraway WM, Hepburn W, Laidlaw R. Influence of rugby injuries on players' subsequent health and lifestyle: beginning a long term follow up. British journal of sports medicine. 2001;35(1):38-42.
33. UNICEF. United Nations Convention on the Rights of the Child1989. Available from: www.unicef.org.uk/crc.