

List of Questions to the UK CMOs Physical Activity Expert Group (PAEG)

This summarises the questions raised 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.

Q 1 We would ask that the PAEG provide evidence of the “educational, health, social or mental health benefits of participation” in rugby and the evidence on “the benefits of experiencing, learning, training and playing rugby, with appropriate supervision, safety and coaching, and physical activity”.

Q 2 In particular could the PAEG provide us with evidence of how these “benefits” compare with other physical activities including non-collision rugby and other non-collision contact sports?

Q 3 Is it the position of the PAEG that collision rugby union and rugby league provide more beneficial health outcomes than other physical activities?

Q 4 Could the PAEG explain why they think we are selective in the reporting of data?

Q 5 Could the PAEG explain how increasing female participation in school rugby would reduce the risks of injury and encourage physical activity in school girls?

Q 6 The PAEG refers to “this is an imprecise estimate”, to Freitag et al’s “presented estimates” and to “uncertainty in their estimate”. Precisely which estimate or estimates are the PAEG referring to?

Q 7 Would the PAEG agree that the rates and risks of injury from rugby in all child age groups are high?

Q 8 Could the PAEG identify the “statistical limitations” they refer to? Are they other than those set out in the ‘Limitations’ section of the Freitag et al paper?

Q 9 Given we are not asking for the elimination of rugby, simply requesting the removal of the tackle and other forms of harmful contact from school rugby, do the PAEG subscribe to the cautionary approach?

Q 10 What do the PAEG mean by “more important... publication bias”? The Cochrane collaboration define publication bias as arising from the “publication or non-publication of research findings, depending on the nature and direction of the results”. (1) Can the PAEG provide us with studies we may have omitted if this is what they mean?

Q 11 Is the PAEG conflating the width of the prediction interval (a statistical term) with publication bias? The width of the prediction interval is a function of between-study heterogeneity, not evidence of publication bias.

Q 12 Would the PAEG agree that no single sport should be compulsory in school and that government should commission a survey of all schools to ascertain what choice of physical activities and sports children have?

Q 13 What evidence does the PAEG have that teachers understand the rules of contact and are properly trained in “initiatives to improve the training and coaching of key skills i.e. correct body position and movement techniques for tackling, rucking, mauling etc.”?

Q 14 What evidence does the PAEG have that schools are fulfilling their duty of care and undertaking injury monitoring and audits?

Q 15 Could the PAEG set out the actual data from the HSE RIDDOR 2005 reported and interpreted in their statement above? We have contacted the Health and Safety Executive but they are unable to reconcile these numbers with their records due to the age of the data. Current data are not detailed enough to breakdown to the level that was previously available.

Q 16 Could the PAEG clarify why they choose the following form of words, that “...serious injuries **can** occur during contact or collision” when it is the case that injuries, including serious injuries, are **most likely** to occur during contact or collision.

Q 17 Does the PAEG agree that there is a need for comprehensive routine school based injury surveillance including sport injury?

Q 18 Would the PAEG agree that successful injury surveillance relies on making good use of the data collected and that data collection without audit and dissemination may have negative consequences in relation to collection of data? (2) Feedback of data maintains data collector morale and high quality data collection. (2)

Q 19 Does the PAEG agree that all the data collected by the Rugby Unions on school rugby injury are not currently in the public domain and should be published?

Q 20 Could the PAEG explain why they do not acknowledge the types of injury and consequences?

Q 21 In providing these clarifications, could the PAEG consider and respond to the following recently published pieces of research on rugby injury and on concussion:

Archbold 2015: A study of 825 adolescent rugby players from 28 Ulster grammar school first XV rugby squads over the course of the 2014-2015 season recorded 426 injuries requiring at least a day away from play with a match injury incidence of 29.06 injuries per 1000 player-hours. (3) Injuries to the head or face accounted for 23.9% of all injuries and concussion was the most common specific diagnosis made accounting for 19% of all injuries. The tackle and other collision situations contributed 63.4% of injuries.

King 2016: In rugby league, children under 11 years old have been found to endure high magnitude head impacts during rugby of a level of severity similar to that experienced by college American footballers. (4)

Pfister 2016: A meta-analysis across all sports in under 18 year olds has found rugby to have a significantly higher rate of concussion than any other team sport with 4.18 (95% CI 2.50, 5.86) concussions per 1000 athlete exposures. (5) The rate of concussions in rugby were significantly higher than any other team collision sport including hockey, American football and lacrosse.

Roberts 2016: In a study of English community rugby over six seasons involving between 46 and 76 clubs per season, time-loss head injuries requiring at least eight days away from play were recorded as 2.43 injuries per 1000 player match hours, with a higher incidence for amateur players (2.78; 95% CI, 2.37-3.20) than recreational players (2.20; 95% CI, 1.86-2.53). (6) Concussion was the most common time-loss head injury, recording 1.46 concussions per 1000 player match hours. Tackles accounted for 64% of head injuries and 74% of concussions. They found a higher risk of injuries associated with the tackle than any other contact event. The researchers hypothesise that concussion incidence in the community game is likely to be underreported due to a lack of player awareness and unwillingness among players to report symptoms and caution that these estimates should be treated as minimum estimates.

Sabesan 2016: An analysis of data from the US National Electronic Injury Surveillance System of emergency department attendances for rugby related injury from 2004 to 2013 found an increasing trend in rugby injuries among all age groups. (7) Facial and head injuries made up more than a third of attendances, up 10% over the ten years. Women were more often injured in the head than men. Seven percent of all injuries were concussions.

Miller 2016: A study of 294 paediatric sports-related concussion patients in the USA found girls were around three or four times more likely to experience postconcussive symptoms lasting more than 28 days than boys (8), a particular concern given the significant growth in women and girls rugby (9).

Sariaslan 2016: A study of a birth cohort from Sweden of over a million individuals under the age of 26 years which identified 104290 who had suffered a traumatic brain injury in the past found that mild TBI (concussion) had a significant negative effect on a person's life chances, when compared with their unaffected siblings. (10) This was true for all measures: receipt of disability pension, psychiatric inpatient admissions or outpatient visits, premature mortality, low educational achievement and receipt of state welfare payments ($p < 0.05$ for all).

Li 2017: In a systematic review and meta-analysis of 32 studies, representing 2,013,197 individuals, prior head injury significantly increased the risks of any dementia, relative risk (RR) = 1.63 (95% confidence interval 1.34 to 1.99) and Alzheimer's disease, RR = 1.51 (1.26 to 1.80). (11)

Emery 2017: There is strong evidence from a systematic review and meta-analysis from Canada that rule changes disallowing body-checking in youth ice-hockey, where a player deliberately makes contact with an opposing player to separate them from the ice-puck, has led to a 67% reduction, incidence rate ratio 0.33 (95% CI 0.25, 0.45), in concussion risk. (12) The evidence for other strategies to reduce concussion risk in sports including protective equipment (helmets, headgear and mouthguards), training and fair play rules is either weak or conflicting.

Buckley 2017: In a study of Australian 13-14 year olds in school, concussion was found to be predictive of violent behaviour and subsequent injury in the year following the concussion. (13) Children exhibiting violent behaviour in year 9 were 2.34 (95% CI 1.07, 5.16) times more likely to have had a concussion in year 8 than non-violent children. Similarly children who had received a violent injury in year 9 were 2.96 (95% CI 1.33, 6.58) times more likely to have had a concussion in year 8 than non-injured children. Both these odds ratios are adjusted for sex, alcohol use, truancy, unauthorised driving and passenger risk (travelling with drink driver or dangerous driver).

Q 22 Do the PAEG agree that head injury and concussion are common; that there is an association between repeat concussions and cognitive impairment, depression, memory loss, diminished verbal abilities and other longer term problems; and that children take longer to recover to normal levels on measures of memory, reaction speed and post-concussive symptoms than adults?

Q 23 Would the PAEG agree that rates of match play concussion have been recorded as rising in both the professional and community adult rugby union game?

Q 24 Could the PAEG explain what they mean by "over-reporting" when referring to concussion incidence in rugby?

Q 25 Could the PAEG provide any evidence they have to support their suggestions of over-reporting of concussion, particularly in the child games?

Q 26 Do the PAEG agree that primary prevention of head injury and concussion is crucial and that the current focus of Rugby Unions on secondary prevention and management of injury is limited?

Q 27 Could the PAEG clarify whether concussion education (i.e. Headcase) (14) is an optional online module in schools and if so, how it is being evaluated? According to data reported at the England Rugby Football Schools Union Development Subcommittee in January 2016, only 400 teachers had so far completed Headcase training.

Q 28 Could the PAEG specify the research they found "on reasons to stop playing sport and become less active for teenagers"?

Q 29 Could the PAEG please identify the Home Rugby Nations initiatives on primary prevention and monitoring they are referring to and if any of them apply to school children?

Q 30 Could the PAEG inform us of any injury surveillance projects in child and school rugby which have taken place since the 2006/07 and 2007/08 seasons and provide us with the publications?

Q 31 Could the PAEG please note and rectify the figures which as presented by them understate the contribution of rugby to sport injuries in younger age groups? We provide the correct data below.

Q 32 Is the PAEG aware of the concerns raised by the United Nations (UN) Convention on the Rights of the Child, fifth periodic report which also affect the sporting and educational contexts, and how children are currently involved in policies relevant to play and leisure? (15) The committee notes that “Children’s views are not systematically heard in policymaking on issues that affect them”, and the need to “Fully involve children in planning, designing and monitoring the implementation of play policies and activities relevant to play and leisure, at the community, local and national levels”.

Q 33 We would appreciate being informed of the selection bias referred to and of the evidence we have excluded.

Q 34 Would the PAEG agree that their feelings about unacceptable risks are a separate and personal matter?

Q 35 Could the PAEG respond to our concerns about the government’s plan for school sport in England and provide evidence for the claim that “reducing the opportunity for children to play rugby in school will potentially reduce access to sport participation more widely, thus increasing disadvantage”.

Q 36 Would the PAEG agree that consideration should be given to which sports and other physical activities offered at school are likely to encourage lifelong participation and decrease disadvantage including disability and disadvantage which arises from injuries?

References

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