

Digital, Culture, Media and Sport Committee

Oral evidence: Concussion in sport, HC 1177

Tuesday 9 March 2021

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Members present: Julian Knight (Chair); Kevin Brennan; Steve Brine; Alex Davies-Jones; Clive Efford; Julie Elliott; Damian Hinds; John Nicolson; Giles Watling; Mrs Heather Wheeler.

Questions 1 - 100

Witnesses

[I](#): Professor Craig Ritchie, Centre for Clinical Brain Sciences, University of Edinburgh; and Professor William Stewart, Consultant Neuropathologist, University of Glasgow.

[II](#): Dr Michael Grey, Reader in Rehabilitation Neuroscience, UK Acquired Brain Injury Forum; Peter McCabe, Chief Executive, Headway; and Richard Oakley, Head of Research, Alzheimer's Society.

Examination of witnesses

Witnesses: Professor Craig Ritchie and Professor William Stewart.

Q1 Chair: Welcome to the Committee. This is our first hearing in our inquiry into concussion in sport. We have two panels today. We will be joined in the first panel by Professor Willie Stewart, Consultant Neuropathologist at the University of Glasgow, and Professor Craig Ritchie, Centre for Clinical Brain Sciences at the University of Edinburgh. In our second panel we will be joined by Richard Oakley, Head of Research, Alzheimer's Society, Peter McCabe, Chief Executive of Headway, and Michael Grey, UK Acquired Brain Injury Forum.

Before we commence our first panel I am going to go around the Committee to see if there are any interests.

Alex Davies-Jones: I declare that I am the co-chair of the All-Party Parliamentary Group for Wrestling.

Chair: Thank you. I have an interest to declare that I received hospitality from the RFU at the beginning of 2020.

Professor Willie Stewart and Professor Craig Ritchie, good morning to you. Thank you for joining us. Your first questions are going to come from Steve Brine.

Q2 Steve Brine: Thanks for joining us. Professor Stewart, I was interested in your recent *British Medical Journal* article. You said: "Current best evidence supports the association between elite-level contact sports participation and increased risk of neurodegenerative disease which, on the balance of probabilities, is a consequence of exposure to repetitive head impacts and TBI."

The reason I read it out is because there are lots of nuances and caveats in there. Could you start the session today by talking about how solid the scientific evidence is that head trauma contributes to dementia and other injuries of this sort in sportsmen and women?

Professor Stewart: Thanks for that question and thanks for the opportunity to come and speak to the Committee this morning.

Essentially this goes back a century. We have known for almost a century that boxers were at risk of late-life neurological complications from participation in boxing. That then was tied to exposure to repetitive brain injury. Over much of last century we focused on boxing and late-life neurological problems, the pathology then described as dementia pugilistica. Looking down a microscope we could see something quite different in boxers compared to other dementias, which we described as dementia pugilistica or dementia of boxers.

Even towards the end of last century we were seeing pathology cases where the person that we were examining was not a boxer, there were other circumstances, including one case of football, soccer. For the last 20 years since the turn of the century focus has turned to other sports



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because we have begun to recognise this same pathology, this head injury or boxing-associated pathology, in people who had never boxed, whose exposure to risk was from other sports, American football, notably, from 2005 and in the last decade or so increasingly in football and in rugby.

That pathology is important because it is a pathology where thus far we have only seen it in people exposed to brain injury. We have not seen it in other circumstances. But the pathology does not give us an insight into whether there is risk of dementia. To do that you need population-level data and we pursued that a couple of years ago in professional football. In professional football we found that the risk of dementia was about four times higher than it should be. If we adjusted for the fact that footballers were living longer, the reality was about three and a half times higher.

We see this high risk of dementia in contact sports athletes and we see a pathology in the contact sports athletes with dementia that is virtually exclusive to brain injury and so we take the position that the only thing that connects football to American football to boxing to rugby to wrestling to other sports where we have seen this pathology is head impact and head-injury exposure. There must be something else because people can have exposure to head injury, people can play the sport in the same way but do not seem to develop problems, so there must be other things contributing to it but the one common factor is the head injury.

To prove it beyond reasonable doubt, as opposed to on a balance of probabilities, is a virtual impossibility because the exposure is in the 20s and the outcome starts 40 years later. The length of time between exposure and outcome is so long that to prove it beyond a reasonable doubt is vanishingly difficult, but on a balance of probabilities I think we are there.

Q3 Steve Brine: I understand that a proposition is merely somebody's conjecture and then you set out to find the evidence to support your proposition. Going back to my question on the solidity of the scientific evidence, on a nought to 10 scale where would you say the scientific evidence is at the moment that points to the thesis that you present?

Professor Stewart: I am a scientist so I do not like to get into a corner of nought to 10 scales. I would rather say that we have more than enough evidence that the only common factor in the people we have seen this pathology in is brain injury. That is everything from people who have played sport and been exposed to repetitive mild brain injuries or concussions or even just head impact, right the way through to people hit by cars. There is a balance of probabilities, at least in my mind, so that would take us well over five.

Q4 Steve Brine: We will come back to some issues. Professor Ritchie, what would you add on the scientific evidence that we have before us currently? That is what we are interested in. Ultimately, when we write a report, we will be looking at governing bodies and Government to make



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decisions off the back of the evidence. How strong is it from where you stand?

Professor Ritchie: Willie has covered that well from a pathological perspective. One of the greatest challenges is to identify those pathologies in people during life. There are still some challenges in drawing together the links between pathology and brain health and dementia, even for something as common as Alzheimer's disease, simply because it is very hard to test for pathologies in life. We do not have the advantage you have in cancer or liver disease where you can do biopsies and you can see what is happening, so we have to rely very heavily on biomarkers.

With that comes a degree of uncertainty as to whether or not an individual presenting with clinical symptoms has the pathology driving those clinical symptoms. That is one of the big things we have to give consideration to. I think there is an undoubted link between head injury and cognitive symptoms. I do not think that is surprising to anybody; that evidence is very strong. But the biggest challenge is defining the difference between association between an injury and a clinical symptom and a causal relationship between an event and cognitive symptoms.

Q5 **Steve Brine:** On the likelihood of somebody suffering in the future, there is a lot of research that suggests that people have a propensity to certain cancers but that does not necessarily mean that they will develop them. There are lots of lifestyle factors—exercise and diet—that can come into play. Can you assess a sportsperson today and get an indication of their likelihood to suffer in the future?

Professor Ritchie: In some ways there are three populations. There are those who are currently playing sport and those who have recently retired, who the focus is on for developing brain health clinics. The third group are those who late in life develop a dementia syndrome and who require care and support with that.

The short answer is, yes, we should be able to collect those various risk and mitigating factors together to create some sort of prediction on what is likely to happen in the future. Unfortunately at the moment the clinical services, the environments for doing that, do not exist. Even when they do exist, and they will exist in the near future, there will always be some degree of uncertainty. The models are not 100% accurate. There is certainly a distance to go to be able to do that risk profiling.

A *Lancet* commission report on dementia was published very recently and it identified 12 modifiable risk factors for dementia, of which one is head injury. There are another 11 things that you mentioned in the context of cancer—exercise, diet—and we also add to that things like diabetes, heart disease and depression as risk factors. When one sees an individual with cognitive symptoms in their life, we look at all the potential aetiologies and all the potential risk factors to try to modify those if possible at the time.



Professor Stewart: I reiterate what Craig has mentioned there. The debate about brain injury and a risk for dementia has now moved on from a discussion about whether it is a risk or not, because the evidence to date—and the *Lancet* commission has summarised that quite nicely—is that somewhere around 3% or slightly higher of dementia in the community has a contribution from brain injury.

Let me flip this around a bit and talk about football again. In our study looking at former footballers, neurodegenerative disease, dementias and other conditions was recorded on the death certificate in about 20% of our former footballers who had died, and just over 6% of the matched population control, so there is a very real problem with neurodegenerative disease in football.

An awful lot of work has gone on for the last 20 years into what that problem might be, but over the last century if you go right back in boxing, to find another cause other than brain injury. So far it has all come back to brain injury is the only common factor. That is not to close the door on other possibilities but brain injury remains the only common factor. You act on what looks like the most likely risk and deal with that, because that is a simple thing to deal with, rather than waiting for definitive evidence.

Q6 **Steve Brine:** There is lots of talk about the team of 1966 and there is lots of talk at the moment, given the pandemic, about risk versus threat to anything that one does in life. Can we be certain? No. Is there a balance of probability based on common factors? Yes, according to your evidence so far. Is there an acceptable level of risk that people take playing elite sport? To put it another way more crudely, would the team of 1966 rather they had not been part of football and achieved what they achieved? Is there a balance to be struck between prevention, mitigation and managing risk?

Professor Ritchie: The short answer is, yes, of course there is. The key for me is information. It is behoven on academics, clinicians, researchers to generate the knowledge and the information for people to make those informed decisions, either organisations or people. There is always going to be a balance of risk but one has to have the knowledge and the information to make informed decisions about what to do.

Q7 **Steve Brine:** Thank you. Professor Stewart, you talked about elite-level contact sports, did you not, in the *BMJ* piece that I referred to. Help me understand the difference between amateur and professional sport. At the end of the day, if you have a head injury, it does not matter whether you are playing for a Premier League football team or a Sunday league football team, does it?

Professor Stewart: No, the head injury is exactly the same. However, the management is slightly different. It is not just the head injury, the visibly recognisable concussed player in the park. There is also the exposure to head impact during the week. The data we have on the risk



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of dementia in former athletes is just based on professional-level athletes because that is where we can access reliable data. We also make an assumption that those professional-level athletes are exposed to more impacts during the weeks of the training, longer training and harder than amateurs would ever be. The risk of injury is perhaps greater because they are going at it more aggressively than perhaps amateurs would be, although having played amateur rugby I might disagree with that on some occasions. We assume that the risk is greater in those elite levels than it would be in amateur but we need the data. We need data and it is very hard to get that.

I come back to the point about the 1966 team. The assumption in the way the question is phrased is it is an either/or: either you can be a World Cup-winning footballer or you do not play football. I think there is somewhere in between where you can still participate at the highest level but you have not put yourself at as great a risk of damage as current footballers might be in and former footballers might have been in. That is by adjusting how we engage with sport—cutting back on unnecessary head impact during the week and dealing better with brain injury.

Steve Brine: That is a very good start, but adjusting how we deal with different impacts of sport is something that we will be looking to explore, I am sure.

Q8 **Clive Efford:** I will ask about funding in this area. Is there enough funding to properly investigate what is actually occurring?

Professor Stewart: I missed the beginning of that question.

Clive Efford: It is about funding. Is there enough funding going into this area of research? We are talking about some sports that are quite rich and there is a lot of money in those sports. Are they putting enough in to research this area of brain injury?

Professor Stewart: You are asking an academic if there is enough money for research. The answer to that is never going to be yes. Of course we need more money. The money that has come forward has been incredibly welcome. The Professional Footballers' Association in England has put in a considerable amount of resource in the last five years or so to look at this, and perhaps longer. The Drake Foundation, a charitable foundation, has put in quite a bit of money in the last several years to try to support and advance this, but it is never going to be enough. This is a big issue to explore and investigate.

As you quite rightly said, these are big sports, big industries. They are global industries. The problem of dementia in sport and head injury in sport is not just a uniquely English, Scottish or UK problem, it is a global phenomenon. We have not yet seen FIFA, UEFA and the other sporting federations, including World Rugby, step forward with quite the same enthusiasm to support research as we have seen from our local sports associations.



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Q9 **Clive Efford:** Where does the majority of the funding come from presently?

Professor Stewart: I can speak about personal funding. The majority of my funding comes from the United States, where research into brain injury and outcomes is much more of a focus, a driver, for National Institutes for Health, so most of my funding comes from the US. I get some funding from UK research agencies and organisations and we have an application in at the moment with the research councils for a project that would take this considerably further forward. Charities in the UK have been very supportive over the years of research into dementia and have offered support to look into this particular issue with sports and dementia, particularly the Alzheimer's Society, which you are hearing from later.

Q10 **Clive Efford:** You say the majority of your funding comes from the US. Is that sport related or is that from other sources?

Professor Stewart: It is brain injury. It comes from the National Institute of Neurological Diseases and Stroke. It is an institute from the US Government. It has also come from the Department of Defense in the US in the past. I have had no funding from sports agencies in the US.

Professor Ritchie: I come at this from a slightly different perspective of research than Willie does. I have been working for the last 15 or 20 years looking at brain health generally, and life and dementia risk, rather than specifically with ex-sports players.

Like Willie said, every researcher would always say they need more money, but we also need to make sure that what research money is given is used precisely and has the greatest impact. Over the last 10 years, from a dementia research perspective, there has been an increase in interest in prevention research, which is obviously very welcome. Within that, we have been supported by very large grants from the European Union and also from Alzheimer's Society and also, as Willie said, some US funding.

The topic of midlife risk and prevention, of which head injury is a part, certainly requires a lot more research investment but it also requires us not to wait for the research findings to be available before we start doing things clinically. We can provide clinical services for this population and collect data on these individuals and use that for research concurrently. I would not separate out research from clinical care; the two can be done concurrently.

Q11 **Clive Efford:** Are you aware of any specific research funded by any sport's governing body that it has access to that has not been published?

Professor Ritchie: I am not.



Professor Stewart: Not that I am aware of. There are studies currently ongoing that have had some support from sport but I am not aware that there is any that they have not published.

- Q12 **Clive Efford:** The Concussion in Sport Group's last consensus statement was made up of 47 different studies; 3,800 had been identified but only 47 made it through to the final statement. Those figures seemed quite startling. Why would so many studies be rejected? Is that because it is too focused in its approach or are they genuinely not relevant?

Professor Stewart: There are two things. First is the very high bar set by that group for acceptance of evidence. Secondly, it is the quality of research that has gone on. As Craig alluded to, it is quality of research that is important rather than the quantity of research. Well-designed, focused studies that are directly towards answering application questions and do it with robust methodology are incredibly important, but they are few and far between in this field. But the Concussion in Sport Group does set the bar exceptionally high for a consensus group. I sometimes read it that it is reading an absence of evidence. Excluding a lot of papers allows it to say there is an evidence of absence. Its reading of the risk of dementia and late outcomes in sport is not something that the rest of the traumatic brain injury or dementia community would necessarily accept.

- Q13 **Clive Efford:** In your view is how it has set the bar and excluded so many pieces of research reasonable? Are you saying that is an unreasonable approach?

Professor Stewart: We are talking about public health and potential impact on lifelong health. You need to take the totality of research and take a pragmatic view of it. In a matter like this, for instance, reducing head impacts—taking an approach on the balance of probabilities, head injury is the big problem here. Reducing head impacts in sport is not going to destroy the sport or cause any huge problems down the line. You take the balance of evidence and say, "Let's reduce the risk of impacts". If you set the bar very high and say you will only accept the highest level of research, we could be 40 years down the line and still not have that high level of research and nothing has changed in sport and the risk has not changed.

You need to take a pragmatic view, particularly when you are talking consensus rather than a meta-analysis. When you are talking about the consensus view, you say the consensus is, on a balance of probabilities, this is a problem and for public health reasons we must address that problem.

- Q14 **Clive Efford:** Does the fact that so many were rejected suggest there is a great deal of research out there that is not robust enough or even draws the wrong conclusions?

Professor Stewart: No, it is quality. There is a lot of research in every field that does not perhaps meet the standards of rigour that we would like. There is a lot of good quality research, it is just that the bar set by



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the Concussion in Sport Group did not quite take all of those research studies into account.

Clive Efford: Do you have comment on that, Professor Ritchie?

Professor Ritchie: No, I have nothing to add specifically on that.

Q15 **Chair:** Professor Stewart, picking up on the capacity of the United States, why is the United States so far ahead of us in this field? Is that a reflection of their more litigious society?

Professor Stewart: That is a good question. I do not know. Partly that may be to do with it. They have the issue, which has been told in the Hollywood movie "Concussion", featuring Will Smith, where the first American football case was described in 2005. That is a huge sport for America. It is a \$1 billion global industry. The reaction to that, the threat, the concern that may be around American football, coupled with the litigation that followed, which cost the NFL something like \$1 billion in pay-out because of long-term damage, has certainly accelerated or focused attention on this issue.

I work in the US quite a lot. I have affiliations and collaborations over there. They have just had a slightly longer-term understanding of the risks of brain injury, particularly lifelong risks of brain injury. This adds to what was there already, that sport is another facet that needs to be explored.

The American military has also been much more aware of these issues because of military field-associated blasts associated with brain injury as well, so there is something like \$2 billion worth of research from the Department of Defense in the US just looking at the effects of brain injury in their war fighters and military personnel.

Q16 **Kevin Brennan:** Good morning, both. Professor Stewart, is rugby safe?

Professor Stewart: Is rugby safe? It is a collision sport, it is a contact sport. There is risk in any of these collision and contact sports. In my personal view, it could be made a lot safer. Things could be done to reduce the risks of head injury and head impacts. There are things that could be done perhaps that would reduce the risk of dementia further down the line, but it is a contact and collision sport. I played rugby. I thoroughly enjoyed the contact side of it, which drove me more towards rugby than football, which in Glasgow is an unusual thing. Aspects of it could undoubtedly be improved.

Q17 **Kevin Brennan:** I was brought up in a very powerful rugby culture and played rugby for Pontypool schools and still love the game hugely and I am very aware of the debate that is going on around it. What you said there is quite interesting. You said it is a collision sport and a contact sport. Is it not the truth that perhaps when I was playing the game and maybe when you were playing the game it was a contact sport but now it is a collision sport? Even in the statistics, when discussing how a game



has gone, dominant tackles and the collision element of the sport, combined with the professionalisation and the bulking-up of players over the last few decades, has meant that it has gone from being a contact sport into being a collision sport. Would you say that that is accurate and has implications for this debate?

Professor Stewart: There is no doubt that those of us who have watched rugby and have participated in rugby over the years have seen this happening. Just before we started you were talking about a colleague of yours who was a scrum-half. I suspect in those days scrum-halves were small and wiry individuals who did not have to have the bulk that a scrum-half now has to have. The professionalism in the game, the professional training for the contact, has created some issues for rugby.

I know a lot of people who work in rugby, both at a national level and at an international level, from the medical side and also performance side. They are wrestling with this issue because on the one hand in the global business, the industry—as you say, there is a revelling in the collisions, a revelling in the contact, but it was doing a lot of damage to the young men and women who play the game so they are desperately trying to find a solution.

If we go back to the American comparison, the NFL, American football, when the problems started to emerge and they could see the litigation coming, made changes to the rules of the game almost within seasons to try to reduce risk of injury. There is a much slower change in rugby, which perhaps they could accelerate to try to reduce risk.

Q18 Kevin Brennan: Was the referee right to send off Zander Fagerson in the Scotland-Wales Six Nations match?

Professor Stewart: You are going to draw me into some trouble here.

Kevin Brennan: I know. It was deliberate.

Professor Stewart: He was, yes, because one of the things that disappoints in rugby, for instance, is the brain-injury level. There is about one brain injury per match in professional rugby, and English rugby has been very good at monitoring the levels of injury. That level of one brain injury per match has stayed the same for about four or five years now and that is an unacceptably high level. If we are talking about balance of risk, one in 30 players going off with a brain injury per match is totally unacceptable in any shape or form. The only way that they can address this meaningfully is to take the head out of the game so if there is head contact that is not allowed. On that occasion, Zander may feel hard done to—I know he does—but he deserved to go off.

Q19 Kevin Brennan: It is very noticeable how much more strictly head-to-head contact or even shoulder-to-head contact is being refereed and the sanctions of sending off and the red card and so on being used. Is that what it is about for the physical collisions that take place in sport, rugby being an obvious example? Is that enough or are other collisions, like



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tackles that take place where there is not head-to-head contact or contact with the head, also dangerous in causing a brain injury?

Professor Stewart: In the data from rugby analysis there is some really good work looking back at all the concussions and head-injury assessments that took place and trying to work out what was the mechanism, what was happening in the lead-up to it. The tackle is the highest risk according to that data.

I do not think it is about fixing on one area and saying we will just work on this. It is looking across the game, not just the game on match day but also what is happening in training. While the recognisable head injuries are undoubtedly important, the cumulative effect of impact after impact after impact after impact, which do not necessarily produce symptoms, is just as important, perhaps even more important. Let's talk about how we reduce head impacts, improve on tackling, think about training in heading but also think about what happens during the week.

Q20 **Kevin Brennan:** On that point about training, it is noticeable that players talk about the brutality of the training that they have been through prior to major top-level matches and so on. One is not always aware of what that means in practice. Would you be in favour of there being regulation around the amount of collision and contact that players are allowed to be exposed to during training prior to major sporting events?

Professor Stewart: Unquestionably. It needs to be legislated from the game to say, "This is the maximum number of contact sessions that are permitted in any one season or any one active season". Again, the NFL stepped in very early on and said contact training should be reduced, if not excluded, from the game as much as possible, particularly during the season. That is something that needs to be done.

Q21 **Kevin Brennan:** Is that more important than the suggestion that perhaps players should play fewer games, for example? Covid has exposed many sports players to have to play more frequently in contact sports. Is the training aspect more important than the frequency of the actual matches?

Professor Stewart: It is cumulative exposure to head impacts and head injury that is the big problem. We need to take it in steps to see how we might reduce this. The easiest thing, in my mind, is to look at training. Let's cut back on as much training as possible. That might produce a fantastic reduction in load and exposure to brain injuries and head impacts. If that is not enough and we are still concerned about the exposure in professional athletes particularly, we have to look at game exposure and see if we could cut back on the number of games.

Probably the last step and the big red button step is to say we have to think about whether the game of rugby continues or whether it is just too risky. I do not think we are ever going to get to that stage because there are so many things we can do before getting there, thinking about training, thinking about contact, thinking about refereeing, thinking about



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adjusting the rules before we say that rugby is too dangerous or football is too dangerous.

- Q22 **Kevin Brennan:** On the issue of rugby and football—and you talked about the brain injuries that occur during rugby matches—heading the ball in football happens very frequently indeed but does not produce an obvious, immediate impact on the player. Is football more dangerous than rugby in the longer term in that regard, or what is your assessment of it as a scientist?

Professor Stewart: That is a really good question. The reality is it is difficult to get a sense of the risk, the lifelong risk to the brain, of participation in these sports. It requires robust data and robust research. So far we have only been able to do something along those lines in football, in the study that we published a couple of years ago, and one similar study in American football. When you look at the comparable risk between the two, there were slightly different methodologies but the risk was very similar. The risk of neurodegenerative disease death in American football was not that dissimilar to what we saw in football. We just do not have data in rugby. We are not too far from having that data but it is an intellectual conundrum on which is the greater risk or are the risks much the same. You could quite easily argue that repetitively heading the ball could be just as damaging as the contacts in rugby.

- Q23 **Kevin Brennan:** Do the club doctors in sport often have a conflict of interest in assessing player health in this regard and what should be the protocol for any medical staff who are involved day to day in sport? We had the controversy with Chelsea Football Club a couple of years ago with Mourinho as manager and whether or not a doctor should be free to run on to a pitch and treat a player immediately. I know in rugby now we see independent medical people pulling players off for head-injury assessments, whether they like it or whether the coaching staff like it or not. What is your assessment of all of that in any contact sports?

Professor Stewart: I know a lot of pitch-side medical doctors and national team doctors and healthcare staff who look after footballers and other players. To a man and woman I have not met one yet who strikes me as conflicted by their role. Their role is to ensure that no harm comes to the players and to look after them as best they can.

I think, though, that the tools they have available to them sometimes let them down. For instance, in rugby if a player is injured the medics can run on the park while the game is in flow to care for that player. If it is a head-injury question they can take them off and look at them in detail down the tunnel. In football they do not have that ability. They have to sit in the technical dugout and hope the referee lets them on. What lets them down is the way the game is managed and the way that they are allowed to interact with the players.

I do not get a sense that the team doctors, team medics, team physios are conflicted in their duty of care to players. I do not get that at all. In



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fact, with head-injury management, perhaps the closer they are to knowing the player the better they are to managing that player because there can be very subtle changes. Knowing them day to day means that they can spot the subtleties.

Q24 **Kevin Brennan:** Football is at last introducing temporary substitutes although it is way late in the day, is it not?

Professor Stewart: Unfortunately, it is not temporary substitutes, and I wish they were. Football has a habit, whenever it is faced with having to develop, of going out on their own and trying to develop something unique to everybody else as if the problem had never occurred before. What football has introduced is a shambles in 2021.

Q25 **Kevin Brennan:** Would you say that the most urgent thing they could do is get on and introduce temporary substitutes for head-injury assessment?

Professor Stewart: Unquestionably. Rugby has made great developments in understanding how you can assess and identify players with a brain injury on the field. That should be a model. That should be the benchmark that all other sports start from. They should not start from a blank page and try to create their own protocol. They should say, "What about rugby? How do we make that happen in football?"

Q26 **Chair:** Professor Ritchie, do you wince when you watch a game of rugby or a game of football and you see the collisions and people heading the ball? Does it make you reel in concern?

Professor Ritchie: Yes and no. We talked about the tackle with Fagerson. I winced at that, of course I did. It was a high-impact collision. Do I wince when a defender heads a ball in football? No, I do not. There is a huge difference between the two. I certainly now watch with greater concern for what will happen to the players over the longer term. That is something I am very interested in. But do I wince? It very much depends on the circumstances.

Chair: You would be doing a lot of wincing if you were to wince every time someone headed the ball, wouldn't you?

Professor Ritchie: Absolutely. That would not be good for my brain health.

Q27 **Chair:** More seriously on that point, is there any evidence to suggest that the heading of a ball has got less dangerous over the years because of the change in the ball? In the 1960s and 1970s the balls were very heavy, they had laces in them and were leather. Now they are polyurethane and different materials. Is there any evidence to suggest that that changing technology has had an effect?

Professor Ritchie: I am going to defer to Willie on this. He and I have spoken a lot about this over the last few years and I know he has much more expertise in it than I do.



Professor Stewart: That is an important question and it comes up an awful lot: the ball has changed in the last half century or so and what difference does that make? The reality is the weight of a ball has not changed for 150 years. When you pick a ball off the shelf to go and play football, the regulation says it is to be 14 to 16 ounces. The diameter of a ball has not changed in the same period. It is supposed to be 26 or 27 inches. It has not changed.

What has changed is the composition of it. The materials, as you have alluded to, have changed, so the more modern balls do not absorb water the way the old leather ball used to. The ball could change subject to weather conditions. Importantly, the physics of this—this is quite a complicated bit now—is that the problem of impact at the head is more to do with the speed of the ball than the mass or compliance of the ball. There is a direct relationship between the speed the ball was moving at and the impact felt by the head, whereas if you increase the weight by a certain amount, the effect that has is the square root of that increase in weight, so it is a very small difference. The weight of a ball probably does not change the impact that much.

If you think of the modern ball zipping through the air because it comes off the foot slightly faster, you could almost argue that the problem is greater in the more modern football than in the older football. The reality is that we do not know. To do that we need to take data and look at the dementia risk in different decades, different years. That is data that we hope to be discussing quite soon but I cannot discuss it today.

Q28 **Chair:** Player footwear could have quite an influence on it? The act of striking the ball or kicking the ball these days could mean it could have more impact when it hit someone.

Professor Stewart: Also training. Modern professional footballers do all sorts of condition training that the older footballers may not have done. They are fitter, stronger, faster and the ball is faster. There is a whole lot of arguments. They are training probably more intensely. There are all these unknowns, and rather than sit back and say the problem in football has gone away because the ball has got better, we have to say the problem has not gone anywhere and could be worse, until proven otherwise.

Q29 **Chair:** You said before the protocols in football are a shambles. In what way are they a shambles?

Professor Stewart: The current assessment of football—the medic cannot go on to the park until they are invited to. The on-field assessment up until recently, particularly for a brain injury is incredibly complex and incredibly subtle and sometimes requires a one-to-one for a few minutes, thinking, “You’re not quite right” in a quiet environment away from the crowds shouting and the cameras and so on. Rugby has demonstrated that really well.



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It needs time and an immediate assessment. Rugby has demonstrated having video cameras recording every angle of the event also helps, because what is sometimes missed, even with the medics pitch-side running on, is a brief loss of consciousness or a brief seizure, which you cannot see from grass level but you can see from the eye in the sky level. All of these things are important.

Football has introduced what it has at the moment. They have given the medics no more time to assess the player on the park. They have given them no time to take the player off and assess them temporarily off the park. They have given them no better protocols with which to assess the player. None of the medical side of it has improved. All they have said is that you can have one more substitute on the bench. That extra substitute on the bench would only be a solution if for some reason football prohibited concussed or brain-injured players from being substituted, but there have never been any prohibitions like that at all. In fact, football's policy has been, "If in doubt, sit them out. If you think there is a concussion they should be coming off the park". There has never been any bar to replacing a player with a brain injury. The challenge has been identifying the players with a brain injury and they have not given them any more tools to do that.

Q30 Chair: Jeff Astle died in 2002, 19 years ago, yet here we are talking about football protocols being a shambles. You said yourself the majority of funding comes from the United States. Why are we letting people down in this way? What is the problem with our sporting bodies?

Professor Stewart: I share with you the frustration that it has taken 20-odd years to get to the point where we are sitting down discussing this today, but I try to look at the positives. We are discussing this today. We have data that were not available to us even a decade ago, which are proving more enlightening. The challenge now is not to make the same mistake where we get together in 20 years' time and say, "What has happened? Nothing". 2021 is the year for things to change, for sports to change.

Leadership in this—the Football Association, Professional Footballers' Association, the Scottish Football Association, the Drake Foundation, the Alzheimer's Society—are people who have all stepped forward to try to make this happen. Where is the global response to it in global sport?

Professor Ritchie: We have been discussing how you can change the exposure when you are playing the game, but one of the equally important issues is for players who have recently retired. This is where I take issue that from a research perspective Europe, UK and Scotland lead the world in dementia prevention research and brain health research and we should be very proud of that.

What we have been talking about so far has been how can you change the exposure, how can you change the level of the player playing the game, which of course is critically important. But we have players now,



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ex-players now, who are terrified about their own brain health and what is going to happen to them in the future. I think there is also a necessity to focus research and clinical care on that population so that you mitigate the risk of them developing dementia in the future. That is something that we are ahead of the game with in the UK.

Q31 Chair: I am a bit curious. You mentioned that we are a world leader when it comes to assessing a brain injury. A lot of the money for that has come from the US. Should the likes of the PFA, for instance not have been putting their hands in their pockets—their very deep pockets, I have to say—much earlier than they have done?

Professor Ritchie: Again I will pass to Willie because he is driving that research forward. What I was talking about was nesting the brain injury research within the broader, more holistic approach to brain health. That involves all of the various risk factors and risk profiling in midlife, of which brain injury is a component but is perhaps not the most important thing at a population level for dementia prevention over all. We have been well supported over the years in Europe and the UK for that broader-based research.

Professor Stewart: I would refer to Craig's passing of that question to me as a hospital pass. We can always ask questions about could things have been done differently or could more have been done sooner. I am not sure I am the person to answer that question. All I can say is that it is happening now. What we cannot do is allow the same mistakes to be made or the future to look the same as it currently does. This is the moment for change.

Professor Ritchie: I will take the hospital pass back, Willie, apologies for that. I go back to something Willie said earlier—there is research and there is research. We have to be very careful or very clear what research questions we are asking and making sure all our methodology and all our science is to the highest level. If the PFA or the Rugby Union were to fund research, we have to make sure it is going to be high-impact research and is conducted to the highest level of quality. Only then will you be able to make a difference.

Q32 Chair: Professor Stewart, what would you do with £2.3 million in your research? Would that make an exponential difference to your findings, to your ability to assess this problem?

Professor Stewart: It would make a huge difference. To put it in context, we are where we are today understanding the risk of dementia in football on a sum of money that is about 10% of that. If you say you are going to give me 10 times as much money, I am not saying I will give you 10 times as much insight into what is going on but we could make a—

Chair: Roughly speaking you have £250,000 and £2.3 million is roughly 10 times that?



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Professor Stewart: Off the back of that we were able to explain the risk of dementia in former footballers.

Chair: That is the reported salary of Gordon Taylor, who is the head of the Professional Footballers' Association. That is very interesting.

Q33 **John Nicolson:** Seeing you, Professor Willie, in your Glasgow tie, I should probably declare that I am running for directorship of Glasgow University when things calm down a little bit.

Could I pick up quickly on an exchange you had with my colleague Kevin Brennan at the end, when you said that what football had introduced was a shambles? Could you tell us why that is?

Professor Stewart: Football, rather than learning from what other sports have gone through in developing good concussion and good brain-injury management policies, has started from almost a blank page. The equivalent would be a video system, the SVR. Rugby and other sports have had that for many years and operated it with great success. Football seemed to want to introduce something similar but started from a blank page and produced something that is regarded as not that successful.

Q34 **John Nicolson:** Why specifically the word "shambles"? That makes it sound absolutely catastrophic. Why is it so bad?

Professor Stewart: It is because the poor medics and physios on the pitch side have no more time, no more opportunity, no more tools, no more assistance to assess players with potentially complex brain injuries. It has not improved the assessment of players with brain injury or potential brain injury. All it has always done is taken care of the perceived tactical disadvantage of having a player removed, so they put one more player on the pitch. In 2021, of all the ways that a sport might have addressed the issue of head injury in its game, that has been a dreadful mistake.

Q35 **John Nicolson:** Are there more concerns about youth sport than adult sport?

Professor Stewart: I think there are. Young people's brains are developing at an incredible rate and there is a lot of important development going on there and we need to be cautious about the exposure to brain injuries and brain impacts in younger folk. We also have a duty of care to younger folk. We stand as parents or as coaches on the side line and say, "We are looking after your health" and can say to young kids, "Please don't do that, we're going to stop you doing that". There are undoubtedly issues with exposure in adults, but adults have a different capacity to make their own decisions in life. All we can do is advise them and direct them in the right course.

Q36 **John Nicolson:** I played rugby at school and was encouraged by my gym teacher to fling myself at the opposing team. If you did not do it aggressively enough you were a wee jessie biscuit. Are you saying that that is a dangerous thing for children to be doing? Should children be



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throwing themselves against one another as adolescents in a scrum in rugby?

Professor Stewart: There are a lot of good things in physical activity and sport. Different sports fit people in different ways. I was not so fond or so keen on football. In fact, I was not very good at it. I was not very good at rugby either but it suited me better. As long as the risks are understood and are reduced—for instance brain injury management. One thing we can point to in Scotland is that we have a concussion guidance policy that has adoption across every single sport. We have one single set of concussion guidance for rugby, football, table tennis, horse riding, whatever sport you like, which has been endorsed and signed up to by academia, sports medicos, sports associations and Government. As long as the risks are there and people understand what they are doing with it, there is no reason why people cannot engage with sport.

Q37 **John Nicolson:** You already talked about children not being able to give consent. You have given figures and written about, the increased likelihood of dementia and so on. A child of 12 cannot possibly give informed consent about accepting the long-term risks of dementia. It is not a reasonable thing to expect a child to do. I am not sure it is even legal. Are parents and teachers putting children in the way of enormous danger by encouraging children to scrum in rugby?

Professor Stewart: You are quite right. That is where parental and societal responsibility steps in because we do not have capacity to give consent at that age. What we do is balance the risk, look at the risks and look at them appropriately.

Coming back to concussion and head injury guidance, one thing we have in Scotland, as a great success, is this single policy on concussion management, which applies to every sport across the sports and grassroots. That has not been replicated in any other country and I would ask why not. It is not difficult to put the tools for brain injury and concussion recognition and management in the hands of parents and coaches, but no other country has done that. There are simple things like that. If we get better at reducing risks, like heading in football—there is no heading in youth football any more because the risk has been recognised.

Q38 **John Nicolson:** Do you think the average parent understands the level of risk? Do they understand the danger of their kids developing dementia later in life because of the sport that they are playing?

Professor Stewart: Let's be clear, the data we have is on professional sport, elite sport, where there is very high exposure. It is a profession, a career. We do not have data on the youth and amateur sports and what the risk might be 30 or 40 years down the line. We can say that there is evidence that exposure to brain injury in these elite levels is a problem, so let's do something sensible and trim it back in young people. It is not going to do any harm and it might just do them some good.



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Q39 **John Nicolson:** What would that sensible thing be specifically? Sticking with rugby for the moment, do you think that children should be allowed to continue to scrum?

Professor Stewart: On scrumming itself, in youth rugby actual contact scrums—the scrums you see in Murrayfield or other stadia—do not really happen until they get into adolescence anyway. It is a reduced form of the game where fewer players are contacting so that is not such a huge issue. Tackling might be a deficient issue and what do we do about tackling.

Q40 **John Nicolson:** What about tackling?

Professor Stewart: There is good evidence that introducing it slightly later—

John Nicolson: At what age?

Professor Stewart: I am not the person to ask about the specifics on tackling in rugby at that age. There is guidance in some of the associations about the ages you introduce tackling and full contact.

Q41 **John Nicolson:** Would you like your kids tackled at the age of 10 in rugby?

Professor Stewart: I have two girls.

John Nicolson: Even so?

Professor Stewart: Despite my best efforts to get them into rugby, they were not interested. They chose hockey instead. But if they had gone into rugby and were playing rugby I would have no particular issues as long as the people looking after them understood the risks and could recognise when there were problems. It comes down to knowing that people looking after the kids are in the best place to look after them.

Q42 **John Nicolson:** What about boxing? Would you allow your kids to box at a young age?

Professor Stewart: There are very strict rules about head contact in boxing, which does not happen at a youth level.

Q43 **John Nicolson:** Professor Ritchie, can I turn to you and ask you the same question? Would you allow your kids to play contact sport?

Professor Ritchie: Yes, I did. My son played football and my daughter played football as well and I had no qualms about that.

Q44 **John Nicolson:** What about rugby, the question we were talking about just now, the tackling?

Professor Ritchie: I played rugby to a reasonably high level to my mid-20s. Would I let my kids play rugby? Yes, I would. I have the same answer as Willie. We have to understand more about the impact of rugby



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tackles, scrums and so on. I would not be best happy about my kids playing rugby and tackling under the age of 12, to be precise.

- Q45 **John Nicolson:** You would not. If we think there is a danger long term of dementia—and I accept the qualification that it is professional players and everything else but we know that that obviously indicates that there is danger involved—should we not be erring on the side of extreme caution?

Professor Ritchie: I think we should be erring on the side of caution. We should obviously be taking that sort of principle, but there is also a narrative here that there is an inevitability, that if you have a risk factor you develop dementia. That has to be argued against. There is a lot of things we can do, even after we have had an exposure to head injury, that can reduce our risk of dementia in later life. I have mentioned that a few times and it should be a focus of research and clinical care.

- Q46 **John Nicolson:** What about boxing?

Professor Ritchie: I don't have a strong opinion about boxing, to be honest. This has obviously been an issue for many years, going back about boxing and Parkinson's Disease. Personally—

- Q47 **John Nicolson:** I know we are worried about children and children being obese and how important it is to get exercise but, presumably, when you look at some of those sports, you have to balance the risk of obesity with the risk of brain damage. I know myself when I watch boxing—which I don't do very often—my heart is in my mouth just watching people pounding one another. I know it is very skilful and I know that I will get lots of people writing to me telling me how skilful it is. I absolutely accept that but it just seems brutal. The idea of young kids doing it just seems to me, as a lay person—and I am looking for your expertise—an overly risky and dangerous thing for young people with developing brains to be doing.

Professor Ritchie: Your point about the societal and physical benefits of participation in sport have to be balanced against the potential risk from head injury. If we can reduce those risks of head injury, the benefit far outweighs the risk.

- Q48 **John Nicolson:** What is your key demand for reducing the risks? At the end of this we sit down and write a report, so I am always very interested in what witnesses want us to put in reports if they could distil it down to a couple of key demands. If you could distil your demands to reduce risk, especially for young people, what would you ask us to include?

Professor Ritchie: First, as you mentioned, there has to be the precautionary principle, particularly with children. Second, I think we have to be better at measuring, while people are playing the sport or immediately afterwards, what the actual damage to the brain has been. We talked a lot about measurement of exposure, but we also need to be better at measuring the actual impact and that could be through



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biological markers or going through tests. Those are things that require an awful lot of research and data gathering.

Q49 **John Nicolson:** Professor Stewart, what is your answer to that? What would you like to see us include in the report as your key request/demands to reduce risk, especially for children?

Professor Stewart: Apply the same principle across the game, as Craig said: precautionary principle or reduce exposure to unnecessary impact. Kids are already getting rid of all heading football in training under 12 and have a very cautious introduction in adolescence. It would be better recognising and managing brain injuries, so I ask the question: why is Scotland the only country in the world that has a concussion guidance policy that applies to all grassroots sports? Why is that not being rolled out to every other country, particularly in the UK? It is not difficult. Surely we could. There is no language barrier; just take what we have and apply it. When very simple things like that are still there to be picked off, let's deal with those first and then we can start wondering about what to do after that.

John Nicolson: Presumably because Scotland is just naturally ahead in so many different areas it just comes easily to us. I will leave it at that and hand it back to the Chair. Thank you for your evidence.

Q50 **Mrs Wheeler:** I will completely move on from big head or anything like that, because that would just be inappropriate.

Gentlemen, thank you so much for coming today. The Chairman mentioned the Astle family at the beginning, who are constituents of mine. I went back to my emails. In 2014 we were discussing having an inquiry into this, so this is seven years later. Parliament is a marvellous place.

I am interested, having listened to everything you have said so far, in taking this to the next stage, so better awareness for GPs, better awareness for A&E with all of the grassroots sports that are out there. Do you think that there is a decent awareness about this and what does good aftercare look like?

Professor Ritchie: There is a distance to go in raising public awareness of sports, brain health and dementia risk. There is still a perception that dementia is an older person's disease and you get almost like inevitabilities. We need to do a lot to fight that. We are finding that the diseases leading to dementia start in mid-life. As such, there are probably risk factors and there are also mitigating factors that can change the course of disease. The whole narrative around brain health and dementia needs to be changed. Within that, I think there is a specific issue around sporting injury and head injury, and head injury generally by the way, not just that resulting from sport.

Professor Stewart: We can think of what the challenges are to all of this in the three phases of life of the brain of an athlete. We have the younger phase where they are perhaps exposed to injury. Are we doing



enough to explain to people what concussion is, how to recognise concussion, how best to manage concussion? There is a whole load of questions there that need to be addressed, not least of which is: why does each sport in some countries have a different approach to concussion depending on which sport they are playing? There are things like that, simple things.

In mid-life when athletes have left the game but have been exposed to the risk factor, which in the balance of probabilities is brain injury, it is what we are doing to manage those people, to support them and make the best of their brain health, not just resigning them to a fate that is predetermined by brain injury. Is there something we can be doing to improve all the other risk factors, which might bring the risk back down towards what we would expect to see in the population?

Then in later life where symptoms may have developed, so the dementia syndromes perhaps have set in, are we supporting the players who have been exposed to that? Are we recognising that the sport may be a problem? I still have footballers and rugby players referred from all over the country for my assessment, sadly, who have a head injury or an associated problem, but the clinical teams will not see it that way or have not seen it that way. Are we registering and recording that problem? There is a 40-year gap between what we do now and what we see down the line and we need to be recording it now so we can begin. It is a bit like tracking coronavirus admissions. The sooner we start counting them the sooner we are going to see whether we are making a difference.

Q51 Mrs Wheeler: That is an incredibly good point. I am interested in your report where you say Scotland is leading the way, and I am always happy to give Mr Nicolson a plug. Has this been disseminated to the GPs and A&Es?

Professor Stewart: This isn't just something that has happened this year. We are on our third revision of this. We revise it every couple of years, so this has been on the go since 2015-16 and we are now on our third revision. As we have gone along, each time we come to revise it we look at the latest research and figure out what needs to be added to. We also have informal and formal ways of assessing how people have picked up on it and what questions are being asked. We did some work last time round with some medical doctors. This time round we are going to work with primary care but also with community settings more, so we will try to work more with schools and amateur sports.

Q52 Alex Davies-Jones: Thank you both for giving evidence to us this afternoon. I know we have talked a lot about the kinds of training that could be changed to mitigate the risks for concussion in rugby and football. How would this apply to other contact sports? Forgive me, I am slightly biased. I am the co-chair of the All-Party Parliamentary Group for Wrestling. Is there a protocol, for example, for how guidance could be issued on choreographing certain moves to prevent concussions from occurring in the industry? Who do you think should be responsible for



this? Willie, I will go to you first, please.

Professor Stewart: As you know, there is a temptation to focus on football and rugby and even boxing, because there is a big headline where people are thinking about it more and people are watching it more, but this applies to all sports in all circumstances. Is there a way that we can take a look at wrestling and say, "What goes on in wrestling, can we reduce unnecessary impacts? Is there something that is happening in training that we could cut back on?" I am not so close to and familiar with wrestling to be able to comment on that directly, but I am sure people in the wrestling community know things they are doing that are repetitive and unnecessary, where they could say, "We have still got an enjoyable wrestling event on Friday night but we can cut back on this during the week".

Q53 **Alex Davies-Jones:** I wholeheartedly recommend you get into wrestling, especially as up until recently the WWE champion was Scottish, Drew McIntyre, so it is Scotland leading the way again there, for Mr Nicolson's benefit.

Professor Stewart: He used to train in the same in the same gym as me.

Alex Davies-Jones: Did he?

Professor Stewart: Yes. That was when he was very young and I was even older, yes.

Q54 **Alex Davies-Jones:** Great. I think you said earlier that this should come from the industry and should be legislated, especially from the games when you were talking about football and rugby. One of the problems that we have is that no such governing body or regulatory board exists in wrestling. It is something that we are looking at to try to change as an all-party group and from the industry itself, but where do you think guidance should come from for sports or industries, such as wrestling that do not have any governing body to help co-ordinate that approach?

Professor Stewart: Obviously, that is a real challenge. For instance, wrestling could reach out to people who will be working in other sports and organisations and say, "Could you give us the benefit of your experience and what should we be doing next?" Whereas there are various licences and professional organisations that cover football and rugby, it is just down to policing within the sports themselves and for participants, coaches and administrators to look after the sport and say, "This is what we expect".

Unfortunately, we all know in life there is going to be bad practice. People are going to not necessarily follow the guidance or legislation, but I think you have to put in place recommendations and just say, "Please, can we all stick to these?"

Q55 **Alex Davies-Jones:** Yes. I would like to go on a bit more to the science



that we touched on at the beginning. Is there any difference between incidence or risk for men and women? For example, we know that women are more likely to suffer from migraines and headaches as a result of concussion protocols. Are there any potential long-term differences between the two genders?

Professor Stewart: Long-term differences is a really good question. We just do not have an answer to that. We talked a lot about football and rugby. A lot of the research that has gone into this has been in male elite sport and not so much on female elite sport. In a UK sense, female elite sport numbers have been fewer to work with but in the US perhaps more could have been done.

What does concern me is that if you look at another risk, if you compare, say, football with the rules for women's football and men's football they are exactly the same. The risk of concussion in women's football is about twice that as in men's football, so the risk of brain injury is double. That repeats itself through rugby and various other sports where the rules are exactly the same. We definitely have a concern about what the long-term consequences of that might be. If you have twice as high a risk of developing a symptomatic brain injury what does that mean many years down the line? We really need to get ahead with that research.

Professor Ritchie: In a more general sense, we know that the risk of dementia from all causes is higher in women than it is in men. As Willie said, you have a higher risk playing sport as a woman than as a man, so potentially negative consequences. That is in the context of a high risk generally of dementia in women, so quite rightly this is a particular focus. In a lot of the research and studies that we have been doing there is an over-representation of women in those cohorts, and we need to collect all the right data to try to understand why there is that increased risk in women over men of neurodegenerative disease.

Q56 **Alex Davies-Jones:** It is quite shocking to hear some of the stats there of double the risk. Given that risk, do you think that the current concussion protocols that are in place are effective in determining these gender differences?

Professor Stewart: It is a difficult timing for that question. Maybe in two weeks' time I could have given you a better answer. All I can say is that we have data that show—there are obviously biological differences that may contribute to the risk in males versus females. We also have some evidence that at adolescent level there may be a difference in the mechanism of injury as well and also a difference in the approach to management of injury, which are quite startling and do ask whether we are focusing attention in the right place.

In the simplest way, if a school or a club has a physio or a doctor available on a Saturday afternoon and there are a couple of matches on, they should be standing on the side line of the ladies game because that is where the brain injury is going to happen, but inevitably they are



standing on the side line of the men's game. It is simple things like that. I don't think we are giving it nearly enough attention.

Alex Davies-Jones: Here is hoping that our report will be able to identify that and we can give it the attention it deserves.

Chair: That concludes our first panel. Thank you, Professor Willie Stewart and Professor Craig Ritchie, for your evidence today. It has been most illuminating. We are going to take a very short adjournment before we start our second panel.

Examination of witnesses

Witnesses: Dr Michael Grey, Peter McCabe and Richard Oakley.

Q57 **Chair:** This is the Digital, Culture, Media and Sport Committee and our second panel today in the first session of our inquiry into concussion in sport. We are joined by Richard Oakley, Head of Research at the Alzheimer's Society, Peter McCabe, Chief Executive of Headway, and Michael Grey, UK Acquired Brain Injury Forum. Richard, Peter and Michael, good morning. Thank you for joining us.

Before we start, I want to ask one question. I believe you were all listening to the first session of this inquiry. You would have heard Professor Stewart describe the current protocols in football as "a shambles". What did you think when you heard that description? Was that a surprise or was that something that you expected?

Peter McCabe: I was not surprised at all because when these protocols were introduced we were very critical of them. We felt that the idea of a temporary substitution was far better and, as Willie said, why would you invent the wheel when it was working perfectly well in rugby? There are a couple of really important things. He mentioned the pressure on club doctors to make a quick assessment. In normal times you would have the crowd baying to get on with the game and the doctors are not given sufficient time. If you immediately introduce a concussion substitute, as they do in rugby, they can take them off the pitch and give them the time to make the assessment that is required.

Within a few days of introducing that protocol, there was a poor example when a player was involved in a clash of heads, Manchester United playing West Ham. He was assessed for two minutes on the pitch and then allowed to carry on for a further seven minutes until half time and then substituted using the new concussion protocols. We think that highlights the weakness of that system.

There is another factor and that is when you are making an assessment if you only have two minutes—and there are a multitude of different languages spoken in a Premier League—how can you assess somebody if you are not familiar with all of those languages? If you take them off the pitch there can be a translator available to help with that assessment. I



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think that for all those reasons we need to change it. It needs to be looked at as a matter of urgency.

Dr Grey: I agree and characterise it in exactly the same way. Part of the big challenge is that the sporting bodies—these non-governmental bodies—have been tasked with all of the responsibility themselves. There is no oversight and they do tend to be more reactive rather than proactive.

We see a lot in the media from the professional associations after a big concussion or after a big news story. In between those times we don't see very much at all. In my view, and in the view of the UK Brain Injury Forum, the Government need to be leading the way. I think professional associations have been given their chance. They have not met the task and I think there needs to be a little bit more leadership.

Q58 **Chair:** What form should that take, Dr Grey?

Dr Grey: I think we need to work with these non-government bodies rather than allowing them to just set their own rules, set their own individual responses to concussion per sport. This is an example where I think the Scottish Government have done this rather well. We can go even more forward than that. If Governments were getting involved, working together with different sports—we had a good example of wrestling earlier this morning and if Government could facilitate wrestling, for example, working with other non-government bodies for better protocols in their sport.

Q59 **Giles Watling:** I ask all three of you what the key concern is about head trauma in sport. Is it spotting injuries in time, heading it off—if you will excuse the pun—before the damage gets worse? I notice Headway says that people must sit it out. People who have had some sort of concussion should sit it out and they should not be left alone. What is the key concern? I will go to Peter with that one first.

Peter McCabe: We think that there is an important message to be sent out about concussion. Elite sports have a responsibility to set a good example to youth and grassroots sports. If concussion is not taken seriously in elite sport, that is going to be happening on a Saturday morning when youngsters are playing, where there aren't ambulances waiting at the side of the pitch. Concussion must be taken seriously and if somebody sustains a bang on the head they need to be withdrawn from the field of play and you need to adopt a precautionary approach.

There is also another very important issue of long-term effects, which we have been discussing earlier today. Both are very important. Both need addressing but we must not lose sight of the need for sport to set a good example to youngsters who are participating at grassroots level.

Q60 **Giles Watling:** Dr Grey, do you have anything to add? I saw you nodding.



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Dr Grey: Yes. You will all have the UKABIF APPG report called “Time for Change” as evidence. In that report we identified a number of areas of concern. One is the area of research where we are suggesting that research funding needs to be independent and transparent. Another is in the area of pain and awareness. We think that the Government can and should be providing leadership with awareness campaigns. Finally, when we look at diagnosis and care, we need to be consistent across the United Kingdom.

There is a number of areas where we need better pathways for people with concussion. We need better CPD programmes for GPs and particularly the ambulance service. We think a large number of people are falling through the cracks in the system. They have concussion and are seen at an A&E. They may get some red flag information, we call it, on discharge and then they are left to their own devices. They may or may not go to their GPs. If they do go to their GPs they may or may not get well-informed advice. If they don't go to their GPs and the symptoms are ongoing it may be months before they get appropriate care.

Q61 Giles Watling: Dr Grey, this might be slightly unfair to ask you but if you could put in a nutshell: what sort of changes would you like to see there?

Dr Grey: On the research front I would like to see more independent research, more transparent research and more funding for research. Rather than leaving it to the non-government bodies, Government could be taking a leading role. Public Health England and some of the various ministries could be contributing to that research. I think together we can do much better than when we are doing this separately. Similarly, for campaign and awareness, if we work together we can do a much better job than we are currently doing separately. For the NHS pathways, not a great deal of money needs to be spent to develop better CPD courses for GPs and the ambulance service.

Q62 Giles Watling: You have answered the question I was going to ask about who should bear the cost. I think that is quite clear. Which body do you think should respond to any changes? Where should the oversight come from? Should it be Government? Should it be non-governmental? How should it come? Peter McCabe, do you have any views on that?

Peter McCabe: I think the Government should take the lead but I think we should not lose sight of the fact—and we touched on this earlier—that some sports are extremely wealthy and have the resources to do things and they need to be directed. We have been campaigning for more research with the football authorities for many years. I think Michael is right. Whenever there is a big issue in the media there is a response but nothing seems to happen until the next big issue, and that is not good enough. Football is awash with money and it needs to spend more of it protecting players into the future and funding research going forward.



Dr Grey: I wanted to follow up with that and say, while I believe that Government definitely should be taking a leading role in this, that does not mean that Government should be wholly funding this issue, nor do we think that the NGBs are wholly responsible for funding. I think that only by working together can we make a dent in this issue.

Q63 Giles Watling: Thank you. I have another question for Richard Oakley. Your society said at a round table in 2017 that, "sporting bodies have a duty of care to their players to protect their health, both at the present time and in the long term". What exactly did you mean by that and how would that duty of care be implemented on a practical level?

Richard Oakley: Thank you so much for the question, and to your last point. There are definitely a couple of things we can do. I think the sports bodies play a massive role in that. To quickly to go through some of those things, we absolutely need to reduce the risk and I think information is key to that. We talked earlier with Professor Stewart and Professor Ritchie that we are not sharing all the information. There are some gaps and there is some knowledge, but we are getting the information out there. That is why forums like today are so important to let people know where there is data so that people can make informed decisions and I do not think that is always there.

As well as reducing the risk, there is a huge question that came up a little bit in the first session around support for those in mid and later life after these situations. The Alzheimer's Society runs the Dementia Connect support line, which is essentially the best way at the moment that anyone who is worried about their condition or worried about symptoms they are feeling can go to a 24/7 support line to get the best advice. They can be signposted to some of the supporting knowledge and information that is out there. It is out there but it is a bit fragmented, and we bring it into one place.

We have launched Sports United Against Dementia, which is an amazing platform—we only launched in December—where we have brought together the League Managers Association, the FA, Welsh Rugby, BBC, ITV, all these other places, for the first time and we are sharing our information with them. We are putting them in conversations with people like Willie and Craig and we are putting information on their helpline and our advice into these professional bodies so that they can share that right now with the athletes in their bodies who are concerned and worried about their mental health and their risk of dementia and symptoms that are going on.

We have got everyone together for the first time. I completely echo my colleagues. That is step one. We have started to do that but then much more needs to happen.

Q64 Giles Watling: Do you think that the trajectory is very positive right now?



Richard Oakley: Today's session is a great sign that things are getting better. We are having the meetings and the discussions. The FA, Premiership Rugby, Premier League are coming together for the first time in a group where they can have these discussions. That is a long way from dealing with solutions and rolling out the solutions completely, but I think that the fact that everyone is coming together and the profile of this issue is being picked up in the media is a good thing. That is raising the bar and we are discussing it, so I think it is good. It is a start but it is certainly not there.

Q65 **Giles Watling:** That is good to hear and you seem very positive about it. I want to move on to the basis behind all this, about the science behind the recommendations. Richard Oakley, the Alzheimer's Society asked for transparency in the science. That begs the question: is there a lack of transparency in the science and, if there is, why on earth should that be?

Richard Oakley: I think, as Willie and Craig and others said, unfortunately dementia generally has not seen the levels of research we would have liked, historically, compared to other procedures, and dementia is the biggest killer in the UK. It is a long way behind receiving the levels of support that a condition like cancer has had historically. I think one of the reasons is that there is a lot of unknowns.

Professor Willie talked about the field study, which is one of the only studies we are aware of in professional sport, professional football. We have not done the studies in other things. The issues of gender, youth sports and amateur sports have been brought up, and the honest answer is Professor Willie is one of the world's best in this. He has done the one study so far published in football and professional athletes who played a couple of decades ago.

We need so much more research. The Government committed to doubling the spend in dementia when they came into government and the Alzheimer's Society is calling for those commitments to be realised. That is so important. It is because of that under-investment historically that we are sitting here today without all the answers we would like to provide you with.

Q66 **Giles Watling:** I want to bring you back to the question of transparency. You asked about transparency, which would imply there was some deliberate opacity somewhere. Why should that be?

Richard Oakley: I think that when we talk about transparency it is more about being honest about what we do know and what we don't know. I don't think it is anyone saying someone is putting up fake information. I think it is just that there is a lot of unknowns and we need to be honest about that. We are having to make decisions based on the fact that we don't have them right now and we have to be honest about that.

Dr Grey: When I referred to transparency on the research side, I am specifically talking about how research is funded and conducted. When a



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non-governmental body funds research it can fund whatever it wants. It is not required to engage with all of the stakeholders. When a Government organisation funds research it is required to do that, so there is much better oversight. When a non-governmental body-funded study runs it may or may not be published and that is not—

Giles Watling: Right. Thank you very much. That has cleared it up.

Chair: We are relatively short of time, so it would be really helpful if the witnesses could keep their answers as concise as possible. Thank you.

Q67 **Steve Brine:** I am trying to understand, gentlemen, what your perception of the science is, having listened to the first panel this morning. Peter, it is nice to see you again. What do you think the key evidence is for making changes to the major sports here and what is missing from that evidence chain?

Peter McCabe: I think Willie summed it up by saying that there is no conclusive proof but there is a clear link and we need to undertake more research and that needs to happen sooner rather than later. What we cannot afford to do is wait another 20 years for a study that looks at, say, footballers who have headed the modern ball as opposed to the old fashioned leather ball. I can recall having the scar where I headed it on the bit with the laces. That needs to be done sooner rather than later and we cannot wait any longer.

In the meantime, where there is evidence emerging, we may need to take sensible decisions such as what has happened with heading footballs among young people and look at tackling and collisions in rugby and keep young people safe. We really do want to encourage people to play sport. Sport is great for young people. Sport is great for us all and we do not want to discourage people from participating in sport but it does not have to be an either/or. You can do both. You can play great sport, you can keep healthy, but you can also reduce the risks, and that is what we must all be doing.

Q68 **Steve Brine:** Dr Grey, what piece of evidence is missing, bearing in mind we cannot wait 40 years?

Dr Grey: No, absolutely. I will give you an example. I am running currently a study called the Score Study, where we are looking at people who are alive, over 40, looking at cognisance decline in people who have played sport at all different levels, professional, amateur and recreational. This is something that is ongoing now. We will have results fairly soon. It is studies like this that could be funded, that do not cost that much and could contribute equally to the pathology.

Richard Oakley: What they discuss here is a difficult question, because there is so much. From the initial studies we now know enough that we can make recommendations to reduce the risk. I think we have seen that things have been done in some sports. When you say what data is



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missing, I think there is already good data that we can make interventions, we have made interventions and they should be rolled out.

The need for more research and what makes this need more pressing and why we should not wait and we do need people to galvanise the community together is there is no cure. There is no treatment we can give anyone who goes on to develop dementia. We cannot even slow the progression of the disease. It is so important that people make decisions about what they are doing. We have some information and we need to start talking about that now.

Q69 **Steve Brine:** Who is standing in the way? Who is not listening?

Richard Oakley: I think we mentioned that the governing bodies haven't before like they have in this Sports United Against Dementia programme the Alzheimer's Society is leading on. They have not come together. We are bringing them together. When people want to spend money, we want to make sure they don't spend it in different ways. I think Willie and Professor Ritchie mentioned that anyone can fund their own bit of research that may not be to the right standards that we would all like to see.

One of the things we are trying to do with Sports United Against Dementia is bring those bodies together, so if and when they do spend money—and one of the things we are trying to help them do is to show where that money could be spent best. That is why we are working with Professor Stewart and Professor Ritchie to do that, to ensure the money is spent in the right way. We have not had the forums to have those discussions and not everyone has always been listening in that way but we have Sports United Against Dementia and we have this Committee, which is a great start.

Q70 **Steve Brine:** Do you want to name any names of who is attending it?

Richard Oakley: I would not be able to name any names. I don't think it is right to name their names, but I think it is great that everyone is now coming together to have these discussions.

Q71 **Steve Brine:** Peter, are you in the naming game?

Peter McCabe: I can say that we have been pressing and pushing the football authorities for many years and we feel that they have not taken this seriously. It is interesting that, having had the invitation to come and meet your Committee, we have had the football authorities at a very high level contact us and say, "Why don't you come and talk to us?" That is a step forward and it demonstrates the value of your Committee. Looking at something gets people moving and gets them focused. That is good news and I thank you for it.

Steve Brine: We are overly flattered. Thank you.

Q72 **Clive Efford:** Welcome. Thank you for coming to give your evidence. Following on from what you have said, Mr McCabe, can you all outline



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your relationships with the national governing bodies? Do they welcome your input? Would you say that that relationship is improving or has it got worse? How do they approach you and what is their attitude towards you?

Peter McCabe: We have been highly critical where we have seen things that are wrong and set a bad example to youngsters and grassroots sport, and we are not afraid to criticise. It has been a bit one-sided, to be honest. We have made efforts over an extended period, going back as far as 2013, to have dialogue. We feel that we have been a bit patronised, to be frank, and there is a need for people to take the issues that we are raising seriously, because they have implications for people's health and their safety and they have a responsibility for the health and safety of everyone who is involved in sport.

That is all sports, but football in particular is the one that we have struggled with. We have had better connections with the rugby authorities and hockey. We have had some good dialogue with them and that is probably the best way to describe it.

Richard Oakley: I mentioned that we have launched Sports United Against Dementia and it is in the early stages. It was only formed a few months ago but already sport, football and cricket, have all come together with television companies to make sure that we are working together in this space. Like I say, step one is about sharing information. We need to make sure that professional athletes right now are getting accurate and fair information. One of the first things we did, for example, is write an FAQ document that these governing bodies have helped send to their members for them to feed into. We have taken it to Professor Stewart and Professor Ritchie to feed into and others as well. I think that is a great start.

The question of funding and more research comes into it and I think that is the next stage when we get everyone together and have those conversations: can we raise the funds; can we direct the funds in the right place? It is not just engaging in the conversations but then start doing it. I am very hopeful that we are having those conversations and they are heading the right way but, as always, Government advice and guidance and a professional steer is helpful to make sure that people follow through with initial enthusiasm.

Q73 **Clive Efford:** When you say are there sufficient funds, where do you believe those funds should come from? Do you think national governing bodies should be paying more or do you think it should be the Government or NHS England, or should it be gambling? The gambling industry, for instance, makes a fortune out of these sports. Should it be contributing to the welfare of the sports people?

Richard Oakley: To be honest, I think it should be a mixed model. I am not sure I would ever want to rely on any one source of funding. I think there is a number of different ways. In the United Kingdom we are very



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fortunate that, certainly pre-Covid, the biomedical charity sector was a huge sector and played a massive role. There are government agencies and government bodies that could do more. Dementia costs the UK economy an unbelievable amount of money, about £34 billion each year and it is going to increase and triple over the next five, 10 or 15 years. I think Government and specialist sport bodies should be interested in this, but it has to stem from us asking the right questions, engaging with the research, really engaging with the researchers to ask the questions, put forward the proposals, get them set and coming through. I think it should be a mix. I do not think we should stick with any one body to solve this problem.

Q74 Clive Efford: Dr Grey, you mentioned the need for independent research. If we get funding from sports governing bodies or other sources, who should determine where that money goes and on what research? Do we need some umbrella group here to determine where money is invested in research in this area?

Dr Grey: Yes, I think we do and I think it could be organised in very much the same way we organise UK research and innovation whereby we set up independent panels of experts who evaluate the research bids. At the minute the individual NGBs are doing this but they choose the people who are deciding which research is funded and which is not. To be fair, it is their money, they are allowed to do that, but if it was set up more like UKRI it would be more truly independent and truly transparent.

Q75 Clive Efford: Are you aware of any research that has been done, maybe commissioned by national governing bodies, that is not in the public domain, that they have commissioned for themselves but have not published?

Dr Grey: Yes, I am.

Q76 Alex Davies-Jones: Dr Grey, you mentioned a lot about now being the time for Government to lead the way on this and I think I sense the frustration in your voice that this has taken such a long time to come here. I am sure my good friend, Chris Bryant, MP for Rhondda, would not mind me saying that he shares your frustration. He has been a long-time vociferous campaigner on this issue. What is the most difficult thing in getting this taken up by Government, in your opinion?

Dr Grey: The big issue is the notion that the NGBs will police themselves and the NGBs will do the right thing and provide the necessary funding. In my view, they have been given that opportunity. I think they have not met the task and there needs to be more oversight from someone else, and in this case it has to be Government.

Q77 Alex Davies-Jones: I am not sure if you heard our earlier session but one of the issues I am struggling with as the chair of the all-party group for wrestling is that they do not have an NGO or a regulatory board. Mr Oakley, you mentioned that when you were compiling your recent report all the governing bodies of the industries and sports fed into that report.



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What are the challenges and difficulties you have from hidden sports where you do not have anybody co-ordinating the approach and the information?

Richard Oakley: As Professor Stewart said, that is an absolute challenge and there is no way—because our first instance has been to work with those bodies to reach into the sport—to get the information out as a feed into the research. I think that needs to be a focus of how we can reach out to those groups.

Q78 **Alex Davies-Jones:** Head for Change is a new south Wales charity. It is doing some fantastic work with sporting heroes who have suffered from sports-related brain injuries. How do you think organisations like those can best support Government in getting this issue the attention and funding it deserves? Dr Grey, I will come to you.

Dr Grey: I did not catch your last point.

Q79 **Alex Davies-Jones:** How can we best use these groups, charities and organisations for getting the issue the attention it deserves? How can they work with the Government in approaching this issue?

Dr Grey: Government needs to provide the leadership. There is a lot of people who are willing to work on this issue. There are some fantastic new charities, even within the last year. Head for Change is a really good example. Within the last three months they have done some amazing things, a bike-a-thon this weekend, for example, to raise awareness. There is a lot of people who are willing to come forward and help but we need some help getting organised. We need a government body that will come together and say, "We will lead this". The American phrase is, "If you build it, they will come".

Richard Oakley: Right now this is a real focus and people are talking about it and it is great to see. We need the new bodies to come up. The income of the Alzheimer's Society and many other charities has been dramatically affected during the pandemic and we now have the opportunity to really talk about this and make sure it stays up the agenda.

With studies we have been funding from Professor Ritchie, we took 700 people to look into what is causing people to develop these conditions later in life. They are at risk right now. We need everyone to talk about it and raise this issue to make sure Government picks it up so that these new organisations can support us in keeping the profile of this important issue high on the agenda of Government.

Q80 **Chair:** Dr Grey, you mentioned to my colleague, Clive Efford, a moment ago that there was research that was unpublished. Why does this research remain unpublished? Do you have any indication?

Dr Grey: Sometimes it does not work out. Not all research is well-designed. I know you are speaking to Dawn Astle tomorrow and I



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encourage you to ask her about that. She will tell you about research that was promised and was not delivered. Sometimes it is simply a matter that it does not work out, but if I am funded by the MRC, for example, to do a research project I have to produce a report at the end of that. I cannot just ignore it. I have to tell people what came as a result of it. There is no requirement for this if an NGB funds a study.

Q81 **Chair:** Do you believe they are sitting on studies right now?

Dr Grey: I know there is data that is unpublished. I would not go so far as to suggest it has been swept under the carpet. I just know there are studies that have not been published.

Q82 **Chair:** With respect, what are you suggesting?

Dr Grey: I am sorry—

Chair: The implication is you have left it hanging here that this research is unpublished. There has to be a reason for that. You said they may not be that robust, potentially, and then you said that basically NGOs do not have a requirement to publish the research they have made into this particular matter. If it has not been swept under the carpet, what is happening? What are the NGOs doing in your opinion? Where are we with this?

Dr Grey: They are not required to. A person who is funded by an NGB is not required to produce a report at the end of that that would reside in the public domain. That is why it would be different with something that is led by UKRI.

Q83 **Chair:** Do you know of any reports that have been funded by an NGB that are not in the public domain in recent years?

Dr Grey: I do not know of any reports specifically because I do not know that they have been written. I do know of funding that has been provided to research where a report has not been produced in the public domain.

Chair: Would you by any chance pass on to this Committee in private the instances you are discussing, please? It would be interesting to follow that up in further questioning of other witnesses. Thank you very much.

Q84 **Julie Elliott:** I am interested in what we can do to adopt best practice that is happening in other places. I am interested in all your takes on what we heard in the first session about protocols Scotland has adopted for care and initial treatment. Also, do you have any ideas or any examples of other countries that are doing things well that we could adopt?

Richard Oakley: Professor Stewart is one of the leaders in this. When he says there have been changes in rugby and some of the changes there were based on evidence of science and he was happy to see those and he has not seen those in other places, I think we have to take that on his authority. We are not doing everything we can do even in this country to take advantage of what we know. The approach Scotland has taken



where it is a universal statement or universal set of rules is a very good example to set. I am not sure why that would not be rolled out in other places to be honest, so I cannot answer that one.

The only country I am aware of, and it was mentioned in the first session, is America where they seem to have taken it more seriously, certainly more quickly than we have done in certain sports. But to be honest, it is not in my expertise to talk about which exact sports are doing that and I will defer to my colleagues.

Q85 Julie Elliott: Do you think the Government need to get a hold of this and take some action on what we know now? We may not have the finite information but there is clearly a trend in this information from what we have heard this morning. Do you think the Government need to take action now on this?

Richard Oakley: Yes, absolutely. We have talked about two things. One is that we need leadership. We need the Government to come in and set some expectations, bring people together and set a framework within which we can all work. We are trying to do that and we are making some progress, but certainly I think that would help.

The other thing is that in the funding the Government committed to doubling dementia spend which would put a lot of money into us understanding some of these things, and not just do recommendations now but go further and make better, more accurate recommendations. When you asked me who is leading, I can honestly say that if we invested that type of money over the next 10 years, we are now beginning to lead this and we are leading it. Those are the two areas I would like to see.

Dr Grey: There are some good examples. The Scottish example is really good and there are other examples in Canada and Australia where governments have come in and produced very good awareness campaigns, very good policies across other sports. I agree with Professor Stewart that Scotland is leading the way. I do not think we can look to the United States because the way their government works is that everything is devolved to the state level. There are some states where they have good policies but, by and large, there is not the same government oversight that we are calling for.

Peter McCabe: Some years ago we produced concussion guidelines for hospitals because we found lots of people were attending A&Es and not given the basic and simple advice that they should have been given. We did a survey and identified that a significant number of hospitals were not meeting the NICE guidelines and we did name and shame and that produced a significant number of changes. Headway was very proud of the fact, because if people do not get that discharge guidance then it can lead to death or disability. It is really important we provide it and it is such an easy, simple thing to do and it is so very important.



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We do not need to keep reinventing the wheel. We should be looking at what is available in Scotland and, where they have protocols for concussion, the well-funded sports should be prepared to share them with wrestling and some of the other bodies we have heard about today. It does not cost anything to share your knowledge and experience and everyone should be doing that.

- Q86 **Julie Elliott:** Peter, we have heard a lot about football and rugby particularly this morning, but are there any other sports that particularly concern you and are there any sports that need to take immediate action to change their rules at the moment?

Peter McCabe: I think the elephant in the room is the one Willie mentioned when he started talking about the research, and that is boxing. Mr Nicolson mentioned earlier how he winces when he sees two grown men throwing punches. We should not forget that the ultimate objective in boxing is to render your opponent senseless by repeated blows to the head. If you saw two men behaving like that in the street you would call the police and they would be arrested. The British Medical Association and medical associations right around the world have been calling for boxing to be banned for many years.

I was surprised when people were asked about this earlier that they did not want to respond and take on this issue. We have no hesitation in saying that boxing causes death, lifelong disability and there is no safe way to box. There is no way of changing rules. If you punch somebody in the head you should not be surprised if they suffer the sort of consequences we see year after year after year. We have spent so much time today talking about sports where the objective is to get the ball in the back of the net or over the try line, but let us not ever forget that boxing and cage fighting and those things where people kick each other in the head is a brutal sport that causes neurological damage.

- Q87 **Julie Elliott:** Are you saying those sports should be banned?

Peter McCabe: If you put me in charge tomorrow that would be one of the first steps I would take, yes. I have seen the effects. Headway has helped many people who have sustained injuries in a boxing ring and they are left disabled for life and there is a huge cost to society.

- Q88 **Julie Elliott:** Dr Grey, do you think there needs to be different standards for men's sport, women's sport or children's sport?

Dr Grey: Not necessarily between men and women but definitely between adults and children in the way that concussion is managed. For children, as discussed in the earlier session, we need to take even more precaution than we are now and certainly more precaution than we do for adults.

- Q89 **Julie Elliott:** Richard, would you like to add comment to whether there are rules that need to be changed now in any particular sport or, as Peter has said, are there sports that you think are too dangerous?



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Richard Oakley: For me the key thing is information. People need to be able to make informed decisions, whether it is for them or on behalf of their children. They need to have the facts and evidence to hand so they can make the individual decision. As we talked about before, sport is a good thing for us; keeping a healthy weight, keeping physically active are good things. They help reduce our risk of many different diseases so I think it is about making sure we are ensuring people have the data and evidence, the scientific facts to hand, that they do not have at the moment unfortunately. We need to make sure that is in place and we just do not have that yet.

Q90 **Chair:** Mr McCabe, you mentioned you want cage fighting to be banned. What did you think when you heard the BBC had effectively signed a deal for this type of sport?

Peter McCabe: I was absolutely appalled and I think the BBC is guilty of promoting sports that are dangerous on a scale that I am just appalled by. There have been occasions where I have wondered whether it is the British Broadcasting Corporation or the British Boxing Corporation because there seems to be an excessive amount of coverage of such sports. Cage fighting just blows my mind.

Q91 **Chair:** Do you think it is even more pernicious than boxing with the potential for damage?

Peter McCabe: I do not know about the research. If you go to the BMA website and look at the studies it has done on boxing, they are really clear and they go back many years. I do not think there is much research on cage fighting but the assumption must be that it is just as dangerous to kick somebody in the head as it is to punch them in the head.

Chair: Yes, it must be even more dangerous.

Q92 **Mrs Wheeler:** As alluded to already, I am interested in the aspect of what GPs and A&Es ought to be doing. Peter, thank you for telling us that Headway has some information out there because the hospital protocols did not seem to be following this. It is this silly question of should we spend more money on research or, as you have already said, Peter, let's not reinvent the wheel. We all know this, so how can we get better reactions from GPs and A&Es every time after the weekend? We have had our big community sports going on and then a bloke is a bit sick, does not understand what is going on, and A&E are saying, "Well, maybe." What are your thoughts on that, please?

Peter McCabe: I sympathise because GPs have so many issues they have to deal with and so much information they are bombarded with, but it is important that if somebody sustains a blow to the head and goes to A&E, they get information. I know a family whose son was discharged from hospital and on the way home he was complaining of having a headache and one of the clinical staff said, "Next time you go out for the night maybe you will think about that". A few hours later he was found unconscious in his bedroom. He had not been given any advice. He had



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not been given the chance to go to the GP and his parents had that awful telephone call to say, "Please come to the hospital, your son may not survive. We will try to keep him alive long enough for you to say your goodbyes". That really shows in a very stark way the dangers of people not having advice. Somehow or other we need to make sure that GPs are concussion-aware and aware of what can follow from a concussion and are given regular updates in a way that will help them protect their patients.

Richard Oakley: I think the two points you made interlink very much. Yes, we do have some research but there is a lot more needed and that could help GPs, and other people who go to A&Es straight away, rather than a GP, to give a medical expert the best information they can possibly have to be able to support and know what the protocols are and to give them more confidence.

They are interlinked and one thing that shook me, anecdotally speaking, to commission some research the Alzheimer's Society fund and work with is the fear and worry they have about sometimes about diagnosing a condition like dementia or Alzheimer's, because of the effect that has on people and families. Unfortunately, our tests are not great and sometimes we make the wrong diagnosis and they are really important, really massive decisions, so there is a fear associated with particularly dementia and making a diagnosis when these things come through. I think more research is definitely needed to make sure we can make these assessments clearly and accurately and that it does not take—which it does—12 months to make some of these diagnoses, which is just too long.

Dr Grey: In the east of England we have the Concussion Action Programme and we have recently looked at this issue and produced a report. With respect to the NHS, we found that there is a large variation in the content and quality of discharge information that people are given if they attend A&E with a mild traumatic brain injury. That information is typically these red flag issues but there is nothing given typically on return to play, return to learn or return to work issues.

Beside the fact that we know what people need to do, we also know there are significant gaps in concussion awareness with GPs. It is considered a mild injury, a minor injury, so is not taught in any great detail in medical schools around the country. As far as I am aware, there are no CPD courses. We think we should have CPD courses. We think GPs should do this type of CPD work that would focus on return to play, return to learn and return to work.

We also found that if one is concussed in school the schools do not provide standardised, written information to students for parents about what they should do next. Surprisingly, physical education teachers are not required to have any first aid training at all and almost none of them in those we surveyed had any concussion awareness training.



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Q93 **Mrs Wheeler:** That is really interesting. As an observation, I have been thoroughly enjoying today's evidence giving. Are no women involved in this at all? Is it only blokes?

Peter McCabe: The majority of our staff are female.

Mrs Wheeler: Just not the bosses.

Peter McCabe: Before we had to make redundancies and furlough staff when we lost 40% of our income, I am proud to say that 50% of our management team were female.

Q94 **Kevin Brennan:** On that last point I think Michael and Richard want to say something very briefly. Do you want to do that, Michael?

Dr Grey: I was going to say it is a very good point that was raised and 50% of the people in my sports project who are leading it are women. I hired a PhD student who is a woman and I hired her because she wanted to focus on women. It is a very important issue.

Richard Oakley: Let us not get into a very important discussion maybe for another time about women in academia, but in the Alzheimer's Society our CEO is a woman and the director of research is a woman. As Head of Research, it is just my chance to come here today but academia and women is a separate and very important issue.

Q95 **Kevin Brennan:** Our focus is on sport. We are the Digital, Culture, Media and Sport Select Committee. You are here as experts in head injury but there is an underlying ethical question to everything we are discussing today about freedom of choice and what people should be able to do in a free society that they may know could cause some harm and does involve some risk. That is an underlying ethical question that goes across a lot of public policy. We have heard talk about certain sports should be banned today. I want to ask you as witnesses how you would advise the Committee on where that line should be drawn between individuals deciding to participate in activities that involve risk and society and the state's right to intervene with that.

Dr Grey: I will preface this by saying it is a good question but it is a legal question.

Q96 **Kevin Brennan:** It is an ethical question as well. I do not want you to say what the law is. I want you to discuss ethically how we should make that judgment.

Dr Grey: From an ethical point of view, I look very much at capacity for consent. An adult has capacity to consent.

Q97 **Kevin Brennan:** Should an adult therefore be free to box if they have capacity for consent?

Dr Grey: I do not like it but, yes. Should a child? No.

Q98 **Kevin Brennan:** Fine. That is okay. You have answered the question



straightforwardly. Richard, what is your view on that question?

Richard Oakley: It is a really difficult question. I agree with Michael. We have to make an informed decision. We have to give people the right information, which we have not been doing up until now. The data, the research has not been there. Once we do that, for Alzheimer's, dementia specifically—smoking and obesity are massive factors we talk about a lot and we should be talking about the risk of contact sport in exactly the same way as smoking, obesity, hearing loss, low education and all these things. But it should be an informed decision that people make.

Q99 **Kevin Brennan:** We do not ban smoking and there are those who think we should. We do ban other types of drug taking. We tend to regulate and tax it, don't we? Peter, I will ask you my original question. Earlier you expressed a strong view that boxing should be banned.

Peter McCabe: I have that view and have expressed it many times. We need to recognise that Parliament has taken decisions about people's freedoms in the past. For example, it introduced legislation to compel people to wear seatbelts and that had a dramatic impact on the numbers of people who are killed or suffer life-long disability from road traffic collisions. It also took a decision to compel motorcyclists to wear helmets, so I do not think you can either have freedom or you can have the state telling you what to do.

The state has the right to look after people and avoid injuries that will cost the state an awful lot of money. My feeling is that people have the right to make decisions and take risks. The question you have to ask is what is an acceptable and unacceptable risk? My feeling is very clear that boxing is unacceptable, and children getting involved in a sport like that is, and I feel that authority should step in and stop that.

Q100 **Kevin Brennan:** In fairness, there is quite a significant difference between amateur boxing and professional boxing in the rules and safeguards around it, but I am sure you still hold the same view.

Peter McCabe: I have a photograph of a young amateur boxer from Scotland who took part in an amateur bout with all those rules in place and had half his skull removed. I would be happy to send it to you but he has not worked since that time. It is something I feel very strongly about, as you will have gathered.

Kevin Brennan: Okay. If it is any consolation, I was asked the question about whether the state should be able to bring in a law to require most cyclists to wear crash helmets 40 years ago at my university interview in the philosophy section, so it is not a new debate.

Chair: That concludes our session for today. Thank you to Richard Oakley, Peter McCabe and Dr Michael Grey for your evidence today.