Academy of PHYSICAL MEDICINE

Transcript

Whiplash
With Chris Worsfold

APM: Good evening and welcome and of course, a very happy new year to you. You've joined us, yet again, for another evening of fantastic CPD with the Academy of Physical Medicine. We've got 90 minutes of learning with others for the UK osteopaths and chiropractors and for everyone else, it's just 90 minutes of fantastic learning. There's been a lot of interest in tonight's broadcast. Not surprisingly. My guest is Chris Worsfold, I beg your pardon, who has been a physiotherapist for over 30 years and has specialized in whiplash for the last seven years. He's spoken at the Transport Select Committee in the Houses of Parliament. He's appeared on BBC One, Two, BBC Parliament and elsewhere and he is a real medico-legal expert in the subject of whiplash. Chris, welcome to the Academy.

CW: Thank you, Steven.

APM: Thank you so much for joining us. It's a great privilege to have someone who is so expert in the subject to come and join us. Tell us about this Select Committee business. What led you to be speaking to the Houses of Parliament?

CW: Thanks. Well, I was specializing in whiplash…it's about 2013 we're talking about here when it all sort of kicked off. I was specializing whiplash as a clinician and I was teaching around the country. So I had quite the high profile within my profession and then Ministry of Justice, England and Wales government decided to review their reporting of whiplash injury, the medico-legal reporting.

APM: What prompted that?

CW: Well, I think that there were a number of issues around the quality of the reporting and question the insurance industry makes this claim that there's a

huge number of fraudulent claims. So they were looking at really shining a light on it and trying to restrict people's ability to make fraudulent claims. So they wanted to review the whole process and they put out a consultation then the Transport Select Committee were interested in interviewing various stakeholders to get their views on what needed to change, what didn't. So I was put forward by my professional body, the CSP, Chartered Society of Physiotherapy and got the call one day, yeah.

APM: So what came out of that? What was decided at the Select Committee? Was it simply information gathering or were some decisions made which affect the course of medical practice, insurance claiming and…?

CW: So the Select Committee's role is really to look closely what the government of the day's doing and they do have some fairly good powers, you know, if they choose to use them. So from a personal and professional perspective, it was really quite therapeutic I think. I got a lot off my chest about what I thought about whiplash and what most people who work in this area perceive as being a problem with maybe the medical side of the medico-legal reporting. Is it high enough quality? Were people appropriately trained to carry out those examinations? Were they high enough equality in terms of the amount of time spent with the claimant? So all that was put into paper and published and obviously, it was aired on the BBC Parliament, as you said and the government went through and made some changes anyway and set up Ministry of Justice Working Committee for a year which I was on and then also form the Board of MedCo which I was also on for about seven months.

APM: Forgive me for saying this. MedCo sounds a very American name. Can you explain what MedCo actually is?

CW: So MedCo was set up at the behest of the Ministry of Justice as a way of organizing all the stakeholders who were involved in the whiplash reporting world. So you're talking about the insurance side, the claimant lawyers, defendant lawyers and the intermediaries, the Premexes and the Speeds of this world who organize and oversee the huge volume reporting and the BMA were also listed on that and the Chartered Society of Physio were there with myself represented —

APM: Can you just roughly assess the extent of the contribution by the osteopaths and chiropractors on this board —?

CW: Well, their names were on the very initial list. The consultation was definitely sent to them. So that was about it. As far as I can tell, nobody appeared.

APM: I suspect that won't come, as a great surprise to the osteos and chiros in our audience that our professional bodies fail to take part because they're a skeptical lot out there but it's disappointing, isn't it? I mean we can come on

to the different roles a bit later on as you see it between physio, chiro, osteo and conventional medicine but anyway, sorry, I interrupted you —

CW: No, it's fine. It is a huge disappointment because we all see the 'medical', inverted commas, side of the table. We sort of work together with the BMA and try to, you know, keep common ground and, you know, share our strengths and work together. So it's a shame there weren't more professionals, clinicians who were involved in that.

APM: It's fortunate that you were selected really because actually, you do work with some osteopaths, don't you? So you aren't just a sort of tunnel vision physiotherapist if there is such an animal.

CW: No.

APM: Were you working with the osteopaths then as well?

CW: Yes, that's right. Yeah, I've worked with osteopaths throughout my career, quite closely.

APM: In fact, in the NHS you said earlier on.

CW: Yes, that's right.

APM: So why should we start with whiplash itself? Because I suspect most of us think we know what whiplash is. I mean I expect that the Select Committee wanted a very strict definition of what whiplash entails.

CW: Well, it's a very emotive term, isn't it? And this is one of the problems with this whole term, whiplash. What are we talking about? Are we referring to the mechanism of injury, you know, the position, the posture the body adopts or are we talking about the injury? Is it a diagnosis? And obviously, there's a whole compensation side to it, whiplash…that concerns whiplash. So an incredibly emotive and what they settled with at the Ministry of Justice which probably most practitioners think is that it's a soft tissue injury of the neck and I think that's quite a useful way of thinking about it, a sprain of the neck and useful to talk to patients about it in that way I think.

APM: Is it useful to confine the definition to the neck?

CW: No, absolutely not, that's right. I mean other parts of the body do get injured and I think it is important to acknowledge that this term, whiplash can, you know…people can say they had a whiplash and they've got shoulder pain or knee pain because they just think it's an umbrella term. So I think you're right. I mean I think the stat show that 50% of people will have some low back pain as well. So it's very common to have other parts of the body injured. I mean if we look at the stats here, if I can show you the slide, this

data that I've got on the infogrpahic here shows the difference in claims frequencies over a period of six years and basically, it's showing that the number of whiplash claims may have dropped about 30%, 40% but it's showing that the number of shoulder claims has increased incredibly, dramatically over that six-year period from —

APM: Related to a similar mechanism of injury?

CW: Well, I mean this is data that comes from what an insurance person will put on the form of what their person is claiming for. So there's a certain amount of creativity and flexibility in what they may be writing down. They may indeed have shied away from using the term whiplash, mightn't they? Because it is such a loaded term and they may have wanted to move away from that. It could be all sorts of reasons but I think this change that is demonstrated through this data, we've had nearly 150% increases in shoulder claims in the last six years. There must be something real going on about car design, seatbelts, the material that the seat's made out of, airbags. There must be something going on that's leading to some sort of change in that data.

APM: I might've missed what you said earlier on this but is that change in reporting due to medical advisers, medical experts choosing to use should injury as their description or is that the claimant themselves, the person suffering the injury who's made that decision?

CW: It'll be the insurance person's interpretation of the claimant's injuries, yeah.

APM: Isn't it in their interest to try to describe everything as whiplash because —

CW: I don't know. If they're trying to show that it's reducing, they might start shying away from the —

APM: Well, I thought their interest was to show that it was increasing and that is was actually a lot of spurious claiming going on.

CW: You might have a point, yeah.

APM: And, you know, recently, I believe I'm right in saying I heard that there's been a cap set on what people can now claim for whiplash injury. Is that right?

CW: I think that's the current consultation that's out, yeah. They are capping it, that's right. A fixed fee.

APM: So when somebody comes to your clinic, and I imagine you must get more than average because you've got quite a reputation dealing with this and I imagine you get lots of referrals in the medical insurance industry and so on what typically would you see which would lead you to decide that this is

genuinely a whiplash injury, acceleration, deceleration injury, however you define it or it's a spurious claim or it's nothing to do with it?

CW: It's a very good question. If you look at the data around the country, there's an insurance fraud firm called Keoghs who look at…investigating alleged insurance fraud and they have like a hotspot chart of the UK where they…black areas where there are high levels of confirmed fraud and these are generally around the northwestern, the northeast of England and there are areas where it's incredibly low, areas of confirmed fraud related to motor vehicle collision and that's around where I work as well as sort of the southwest and other parts of the UK. So literally, I don't see a lot of fraud. It doesn't come through my sort of network. How would I know if I did see it? This is the question, isn't it? How would you know if you're not seeing it?

APM: I guess what is your diagnostic process in this?

CW: My feeling around it is if there's a slight nagging doubt in the back of my mind, the person often doesn't come back for treatment if I'm seeing them for a rehab perspective. I think that's probably true that people tend to turn up for the first appointment and I think anecdotally when I teach around the country, people say that they had a sense somebody might be…not being genuine and then they probably don't turn up for the rehabilitation. From a reporting perspective…I mean from a court and legal perspective, you're not there to make a decision about the truthfulness, the veracity of someone's symptoms, whether they are real or not. You can comfortably say, "This is not a consistent picture, not a typical picture," that the judge in the court work out the rest or indeed, you know, if you're called to give evidence, you can embellish that but really, in a report, you're there to say that these doesn't fit together, you know. They maybe moved their head this much when they're taking their sweater off but when I checked them, they had much less movement. These kind of comments can be useful.

APM: So what is a typical picture?

CW: Of?

APM: Of a whiplash injury.

CW: So the kinds of clinical features that you might find…so through all the experimental and laboratory and clinical studies, we've got quite a good grasp on what the clinical features are. If I can just get this slide up for you, so this is sort of a graphic summary of what different research avenues that…so it comes across quite nice and when people try to make out, it's quite a simplistic injury and this maybe demonstrates why chronicity rates are so high. I mean we're talking about 20% in some cohorts, 1 in 5 people will go on and have pain for 2, 3 or 4 years and that's high levels of pain and disability. So we're talking about muscle control, motor control problems,

muscles become more sluggish after a soft tissue injury and in the neck, it's also the case. The muscles don't work as quickly. When they do work, the motor drive is less. So there's less input to the muscles. So they're not as strong. We have this fascinating finding of muscle fatty infiltrate. Jim Elliot, a researcher who was at Queensland, now in America has demonstrated consistently through several studies now that in the musculature of the neck in whiplash injured patients, there is this finding of muscle fatty infiltrate, which is not there in a traumatic insidious onset neck pain. It is characteristic of traumatic neck pain.

APM: Does it occur in trauma elsewhere in the body?

CW: It can do. So if you have rotator cuff injuries, you can get some fatty infiltrate. In some low back pain injuries, you can as well. His thinking at the moment is that this is a systemic change. He's also found it, very recently, in other parts of the body, the fatty infiltrate in the calf muscle, for instance. So it seems to be…I think I would be right in saying he's thinking it's maybe part stress response and maybe part could be explained by a spinal cord injury, a very subtle spinal cord injury but this is experimental work and there's still work going on in this but it's very, very interesting.

APM: Is there a hypothesized mechanism for that with a spinal cord injury, what's causing the infiltrate?

CW: Well, that's very interesting. There's some, again, very experimental work which has been done on cadavers and on the pig in animal studies where they've demonstrated pressure changes within the spinal canal with the whiplash mechanism of injury. So the volume within the spinal canal where the spinal cord's sitting changes when we move from flexion to extension in our necks, doesn't it? It goes from large volume to small volume and in the whiplash insult, in that mechanism of injury, you get changes in the volume when you move from flexion to extension incredibly rapidly. So that could induce a pressure wave, a buildup of pressure and then a drop in pressure very rapidly and there's some fairly good experimental evidence that that could damage the dorsal root ganglion and lead to some of these changes and possibly damage the spinal cord as well. I know it's hypothetical but its very interesting research.

APM: And there's presumably quite a lot of research going on into this at the moment, is there?

CW: There is at the moment, yeah, continuing it down that vein as well, yeah, with regard to pressure changes in the spinal cord.

APM: Turning again to the patient who comes to you with an injury following a car accident, let's call it that rather than call it whiplash, what differences do you see, say in direction of impact, driver, passenger, you know, obviously with

the seatbelt in different directions? Do you see a typical pattern for those things?

CW: I think it boils down to every person being unique and individual. You can have two people in a car accident. One can have severe, high levels of pain and disability and the other person can be absolutely fine and it all relates to perhaps their preparedness for the accident. Do they get a sound? Do they hear? Could they see? Did they catch sight of something so they could prepare and brace their bodies for the impact? Are they physically fitter? Are they lighter or heavier? How were they sitting in the chair? You know, was their head rotated? All of these things could affect the kind of injury that you come out of that accident with.

APM: What are the most severe injuries that you've come across? I mean presumably, we're not just talking about muscle injuries here, are we? We're talking about potential fractures but certainly the potential for ligamentous sprains as well.

CW: Again, I think the literature and my clinical experience agree on this, sort of that it's very rare to get a fracture following this kind of injury. You're more likely to get that when the car rolls over, when you're hit by a very much heavier vehicle, greater mass and the highest speeds, obviously. So these kinds of scenarios would start to ring warning bells but again, it's very rare. By the time people come, they've usually been screened, you know, GP, maybe A and E and they're doing lots of triage over the phone now these insurance companies. So it's very rare. I mean in terms of the severity, I suppose one of the problems with this subgroup of patients who don't improve is that they present with very high levels of pain and disability from very early on and it's really…I suppose the research strongly suggests we need to screen these patients very early on to try and identify this subgroup who aren't going to get better so that we can kind of target interventions to try and help them. So I think that's where the research becomes helpful as well from a clinical perspective.

APM: Our first question has come in. Thank you to whoever sent this in. Do feel free to give us your names, as always, because it makes it a little bit more enjoyable for all of us if we feel we're having a conversation with you but we're very happy for you to preserve your anonymity if you prefer. The question is that in your experience or in your research, have you found distinct patterns of cervical spine dysfunction? For example, C2-3 are thought to be important osteopathically.

CW: I think the only time levels are mentioned would be in some of the…from the research literature would be from looking at experimental studies where…and I think we're looking at the lowest cervical spine, perhaps the cervicothoracic junction and that's the one thing that sort of comes up, research from different avenues where they're doing maybe live crash tests,

some cadaveric studies and then maybe looking at the clinical presentation and responses of different facets, levels to radiofrequency neurotomy or local anesthetic blocks.

APM: Tell me what radiofrequency neurotomy entails.

CW: So radiofrequency neurotomy or RFN lesioning, radiofrequency neurotomy lesioning basically entails…it's an outpatient procedure that's used to coagulate the nerve that sends the signal from the facet joint to the spinal cord. So you're basically destroying that nerve and it can get rid of pain completely if it's successful. It's a very useful procedure. It's useful experimentally but also clinically as well.

APM: It does beg the question, why does this pain go on for so long? Why are we having to destroy a nerve signal or destroy the nerve in order to overcome the pain? Because there is a dysfunction there that's causing the pain. We ought to be able to fix that. Is it simply we haven't worked out what it is we're trying to fix yet?

CW: I think it's a very, very good question. It's probably one that perplexes most clinicians day in and day out why some people not respond to treatment and I think the research and sort of expert narratives, presently are getting a very good handle on what may be happening to that group of patients who are experiencing ongoing pain. So one side of the argument is that there's probably some peripheral nociceptive driver. There's something wrong that's still sending nociceptive sensations to the spinal cord and up to the brain. So there's something there that can be blocked peripherally and that also reduces psychological distress when the radiofrequency neurotomy's carried out. It reduces catastrophization. It reduces post traumatic stress reactions to a lesser extent but also, it does reduce them and general levels of psychological distress, anxiety and depression arising from the pain appear to decrease. So there's that side of the argument but there's also this other side where a lot of work's being done looking at those individuals who perhaps have a vulnerability or a lack of resilience, perhaps genetically from central nervous system point of view, perhaps they have sensitization in their nervous system, perhaps they're psychologically less robust, perhaps they've had trauma in the past either physically or psychologically and this makes them much more likely to have an injury that then goes on producing pain. And I think our challenge as clinicians is to try and identify where this person sitting in front of you today is on that spectrum and how best to intervene with those particular patients.

APM: I want to go on with that in a second but we've had a couple of questions about the fatty infiltrate that you mentioned earlier on, one asking what exactly do you mean by that but the other also asking is this palpable? Can we detect it or does it require sonography or MRI to identify?

CW: Those are very good questions. So the first question was…?

APM: What exactly is it?

CW: What exactly is it? So we're talking literally here about what's termed transdifferentiation. So this is the changing of muscle tissue into fatty tissue. So it's actually the muscle tissue changing. Now, it does seem to be present more so in those patients who have higher levels of pain and disability, those who are suffering more from a post traumatic stress reaction. So they're those people who've had a bigger reaction physically to the accident and this occurs at four weeks as well. So —

APM: It's noticeable then or it becomes —

CW: So you can do a scan at four weeks and notice that they have that already, yeah. And it tends to be much more apparent in that group of patients who have higher levels of pain and disability.

APM: And is it all muscles or a particular group of muscles generally?

CW: Well, the initial research suggested it was the deep stabilizing muscles, the deeper muscles of the neck, not so much the global muscles of the neck but now, as I said earlier, it's perhaps more of a systemic…it's recognized more as a systemic change, perhaps something's going on and affecting all the muscles in the body but what causes it? There are hypothesis. Don't really know. Could it be as a result of the stress response, similar to the changes you might get in fibromyalgia, with hypoxia? Is it related to the fact that the muscles of the neck…if it's happening in the neck, muscles of the neck undergo a sort of reorganization? So you get a reduction in the stabilizers. The deep neck muscles start to work much less. They become more sluggish, as I said earlier. The superficial muscles become overactive, become more active. So there's some thinking around the fact that this reorganization may be related to this muscle fatty infiltrate. As to whether you can notice it clinically, that's a very interesting question. The early studies that followed people up following whiplash injury, say 10 years afterwards, noted that although they had ongoing pain, their muscles weren't any less bigger and people who didn't have any pain were compare to normal, healthy controls. So they had the same sized muscles. Occasionally, they were larger and it's only since the advent of scanning and high resolution scans and Jim's ethic work that they've identified that this change may be because there's muscle fatty infiltrate bulking out the muscle and making the cross sectional area appear larger than it actually is. So whether you can pick it up on ultrasound, I don't know. I wouldn't like to give a judgment on that. I would imagine you could look at the density of what you're looking at and pick up muscle but I don't know. I wouldn't like to make a judgment on that but certainly it's identifiable on the MRI, definitely yes. I mean it's interesting, isn't it? You rarely find a person who you feel has got wasting of the muscles of the neck

and you can often pick that up around other injuries. So that's an interesting finding from the research that I think fits in clinically.

APM: Before we got distracted talking about fatty infiltration, you were talking about the types of people who you see with different types of prognosis in this. When someone comes in to your clinic, do you say, "I can see this personality type. This is the sort of person who is going to maintain this injury for a very long time," or is that too simplistic?

CW: No. I mean personality type; I don't like to use that term. I mean I don't know whether it's appropriate or not but I would…when you're an experienced clinician, you can pick up people's attitudes to pain and I suppose we're looking at how anxious someone is about the pain, how fearful they are of moving and catastrophization. This concept originates by Michael Sullivan's work. The pain catastrophizing scale is very, very interesting and very useful clinically, this idea that some individuals will ruminate on pain, that they appear helpless in the face of pain or in the face of stressful and traumatic situations and also that they will also feel they have no control over their pain. So they adopt passive coping strategies. So, "Can you help me? I need help. I need you to fix me. I'm going to take painkillers and I'm going to lie down," and all of these coping strategies, they impair your body's natural, indigenous pain…natural pain relieving substances that are naturally present. So it's almost like a downward spiral self-fulfilling prophecy. So I think for many years, we've sort of yes, this person and this person's just not going to get better but maybe now, we're getting some headings and some descriptions that we can maybe work under and identify. In some patients, you can challenges these beliefs and work with that and get them to use positive self-talk or just think about what is going through their mind and whether that is appropriate for the kind of injury they have.

APM: Are you, yourself trained in psychological therapies, if I can use that term? Talking therapies, positive self-talk is something that sounds great but I wouldn't know how to encourage that in a patient. I've got an idea of what it means. What's your approach there?

CW: Well, I think this, exactly what we're talking about, is just where we're at in whiplash now. I don't think there's sort of an…I think there's research being carried out as we speak. I don't think anything's been published at least in the last six months or year that's really described a, you know…the hitting the nail on the head sort of psychological program, helping people after this kind of injury but…and I use that term very loosely, positive self-talk. I mean with some patients, you can turn around, you know, and ask them to observe what's going through their head when they're performing certain movements in the clinic and whether they're, you know…they feel like they shouldn't move, they should brace, maybe they feel…are they causing damage or injury, maybe activity, they feel physical exercise is not a good thing, these kind of beliefs and then you can turn those around and give information,

education and sometimes that sticks and sometimes it doesn't. People's beliefs are stronger than your sort of approach

APM: The fatty infiltrates are intriguing our audience. Another question about that, does the tissue subsequently fibrous as it might do in chronic injuries, do you know?

CW: That's a good question. I'm not sure, off the top of my head, the longest period that people have been followed up prospectively. I think Jim Elliot's work too us to six months, maybe a year at the most after —

APM: Jim Elliot is…?

CW: He's a physiotherapist who works…he's out to Chicago now but he was at University of Queensland where a lot of the whiplash research was carried out over the last decade, under sort of the leadership of Michele Sterling and Gwendolen Jull, two physiotherapists out there who got a lot of funding from motor accident authority in Australia but I don't think the thinking is that it changes much and its significance, we don't really know.

APM: It sounds to me as though…from what you're saying so far, that the evidence base doesn't contribute a great deal to what we do, how we can advice patients or how we can inform the insurance companies on what's required because there's an awful lot of uncertainty in this isn't there.

CW: I think when we're looking at it from a pathological point of view, what does the research tell us gets injured in whiplash and we're pointing at the facet joint, the facet capsule probably gets torn and then the question is, "Well, if that's the case, why doesn't that heal up in 2 or 3 months?" Well, we know with any musculoskeletal injury or sudden onset of pain, there's this risk of chronicity for the reasons we've already described, down to the individual's vulnerability, maybe genetic, etcetera, central nervous system sensitivity. So there's that going on in the background but in terms of what can we do clinically when presented with this kind of possibly a complex picture then I think there are two ways of looking at this. One is that we need to triage the patients very early on. So we need to screen them. Are they suffering from post traumatic stress reactions? Are they this catastrophizing type of individual? Have they got high levels of pain and disability and there's one thing that comes out across all the studies. It is that this high pain threshold is a very strong predictor of poor recovery and I think in the study —

APM: A high pain threshold?

CW: Sorry, a high pain intensity.

APM: Sorry, OK.

CW: High pain intensity is a very strong predictor of poor recovery. So if you have a patient who's describing higher levels of pain, it's very important to get pain relief and, you know, you could use osteopathic techniques, physiotherapy techniques to do that, medication's obviously an option as well but it's very important to try and get pain levels down. That's probably the number one take home message if you trawl through all the whiplash literature on what should we do to help people and identifying post traumatic stress reactions is incredibly important. There's a very strong relationship between someone experiencing a post traumatic stress reaction and not getting better and that's…usually recommended that that's not screened until about six weeks after the whiplash injury because that change may be taking place during that time period and you want that to settle down before you start to examine —

APM: So you don't have a baseline from the day of reporting the injury that you then measure against six-week —

CW: No. I mean particularly with post traumatic stress reactions, the suggestion is just let it be and let it settle and it should be settling down to minimal levels by six weeks and if it's still problematic then and we're talking about people having intrusive thoughts about the accident. They find themselves thinking about it all the time. They're still in quite a hyperaroused state about the accident, so sweaty palms, jumpiness, irritability. This kind of state should settle and it could after any injury or any trauma and it should settle and if it's not settling and you're there seeing someone 2 or 3 months down the line and they seem to be presenting with these kind of problems, they're having nightmares about the accident still, it's intruding into their thoughts then it's the possibility that they do have a post traumatic stress reaction.

APM: Some more questions. They're all being very shy out there. I haven't had any names yet. So the last question I've had in is, "I have found," says our inquirer, "That patients often seek treatment from 2 to 6 months following an RTA. They may not even relate their symptoms to the accident but their history would strongly indicate a link. Is that your experience and do insurers accept that symptoms can emerge over time?"

CW: It's something that came up when we were with the insurers and I think from a clinical perspective, I totally agree. I think I see a lot of people who've had an injury in the recent past or even many years down the line and I think the research message is it's very clear that past history of whiplash injury increases your risk of future neck pain. It triples your chances of future neck pain. It's the strongest etiological risk factor for future episodes of neck pain. So very important point but there can be a delay I think, yeah. It's very hard to rationalize that on, you know…from sort of a simple inflammatory and injury perspective but there can be a delay in people's symptoms.

APM: I suppose from a treatment point of view, it doesn't really matter, does it, whether it was caused by that accident. I mean it might lead you to consider the mechanisms of injury you described earlier on but from the patient's point of view, it matters if the insurers now won't cover it because it's been six weeks since the accident and therefore, it can't possibly be a whiplash injury.

CW: I think that's right, yeah. I think that that's right. I'd agree with that, yeah.

APM: Somebody else has asked this one. Does the research say anything about the severity of symptoms being related to the direction of impact?

CW: No. Most of the research has looked at the rear impact accident and it's interesting. The majority of accidents are frontal. They're often you're driving into something in front of you. Rear —

APM: For one of the two cars, in every incident that's going to be the case.

CW: That's right, yeah but I mean in terms of people who hit head on as well is a much more common accident but you're right, for everyone being hit from behind, there's someone driving into them in front but I think when we're looking at the rear impact collision, if someone's driving into the back of you, the person who's been driven into, so who's been struck from behind will often have…is at greater risk of injury. I think the person driving into them very rarely seeks helps.

APM: Because they've been able to anticipate the impact or…?

CW: That's right, yes. They've been able to anticipate the impact but also the forces acting on the head and neck of the person in the car that struck…and that's termed the target car, when that's hit by the bullet car that comes in from behind, the acceleration of the head and neck is much, much greater.

APM: Why is that? Because —

CW: I think it's of the magnitude of three times greater.

APM: Really? Why is that? Because obviously the speed and the change in velocity is the same. Is it the fulcrum of the head rest and what it does to the —

CW: That can be a reason, yeah, absolutely, sort of the position you're sitting in, it feels much less natural to be forced into extension than to fall into flexion I think but I think one of the main reasons, as you highlighted, was the fact the person can see the accident coming and can prepare for that. Should we show some film of a couple of crashes that we've got here—?

APM: Please.

CW: --which will highlight what I've been saying.

APM: I want to say to the audience too that we're showing these films live but we won't be putting these films up on the recording on the website for reasons which I'm not going to go into right now. So make the most of them while you can see them here.

CW: So this is an accident that a guy's driving into another car. This is a live crash test study and he's driving at about 37 miles an hour and his head and neck acceleration is about 10 g. So his head and neck weighs about 10 times as much as it normally does and you can see at that speed, there's huge property damage. The cars are crushing. Energy's absorbed and dissipated throughout that accident.

APM: Who the hell volunteers to do that?

CW: I don't know.

APM: This is in Australia I think wasn't it?

CW: This was in America these shots.

APM: America.

CW: So let's contrast that accident with this one where some chap's sitting in his car and he's hit from behind at about eight miles an hour. This is a very trivial feeling speed. So there's no damage to the cars in this situation. And what you can see there is that the head and neck acceleration is around 13 g. So these very slow speeds, you get very high acceleration, higher indeed than you had in the big 40-mile an hour crash we just witnessed.

APM: What's the delta-v in this?

CW: So delta-v is the…it refers to the change in velocity of the vehicle that's been struck. So if you're sitting at 0 miles an hour and you reach a peak of five miles an hour after you've been struck —

APM: So he's been hit by somebody at 8 miles an hour but his car reaches 5 after the incident.

CW: So when you have an accident, that's what the crash investigator comes around to assess. They come around to assess what the delta-v was, what the change in velocity was.

APM: How on earth do they do that?

CW: Well, they look at the damage to the car. So they're trained to do that by looking at how much damage there's been occurred to the car and they try and estimate it from that to see if it fits in with what you've described and the injuries that you're describing as well.

APM: I often find…I say, "Often find". I don't see that many whiplash injuries, well a reasonable number but people will say, "Well, I'm hit in at 13 miles an hour," and I suspect that that's the last speed they remember seeing on their speedo where they were hit at that speed because we've just seen a video of somebody being hit at eight miles an hour and literally the whiplash of the neck over the headrest was quite significant, wasn't it? And presumably, the position of the headrest is very important in mitigating the effects of that accident.

CW: Absolutely, right. Yeah, there's been quite a bit of research carried out on this. Most people have their head…restraint is the correct term used in the research, have their head restraint and I will lapse into calling it head rest in a minute. Head restrained at the incorrect height for most people. I think ¾ of drivers don't adjust them. The correct position is it should be slightly above the top of your head, at the back and is close to the back of your head as is comfortable. When you're hit from behind, you're actually pushed into the back of the chair and you smear up it. So it actually makes you a little bit taller, plus you get extension of the lumbar and thoracic spine, which makes you a little bit taller as well effectively.

APM: But presumably, that was a badly positioned headrest in the video we saw because it…yeah.

CW: Yeah, it was.

APM: Because it was very low and it…yeah. Quite apart from this, this will be before someone came in with a whiplash, do you advise patients on where to position their headrests it's obviously something that must be in your mind at some point?

CW: No, I don't.

APM: No. You want the injury later is it?

CW: Yeah, that's right.

APM: I've got some questions. Somebody has admitted who he is, Paul, Paul Masters, thank you. He says that in America, people can no longer claim for whiplash injuries. Do you know if there's any truth in that?

CW: I didn't hear that.

APM: It would be interesting if anyone else can fill us in on that one because as you say, it's becoming more and more contentious, isn't it? And here, we have one from Matthew Davis, Matthew. There's a perception that whiplash is not a permitted diagnosis now as opposed to not being accepted as a permitted diagnosis. How does that work with your reports in insurance claims and have you encountered any issues with medical end insurance officialdom when you've been writing your reports?

CW: I think it's right to be suspicious about using that term for the reasons we've outlined. It's emotive term and what exactly are you talking about when you call it a whiplash. So try and be as medically diagnostic as you can, you know, and using terms referring to parts of the anatomy, muscles, ligaments, facet joint, facet joint levels and sprains and strains and using these kind of terms I think, nerve root problems, those kind of problems if they're there. I don't think there's been a problem. I think maybe claimants solicitors want to see the term whiplash so that it sort of, you know…it's ticking a box and it's fitting it into some sort of process maybe and I might be wrong. I don't know but I think probably the categories that the judges work from probably outline…use the term whiplash as well, so they'd want to tie it all together, I would've thought.

APM: I've got a question here which starts rather peculiarly but it says, "Like an internal tsunami," I'm not sure about that, "Are there any particular fascial strain patterns you particularly see or treat in patients with whiplash?" This is Emily in London and I think it's been distorted she asks also, "Does something permanently change in the Golgi bodies leading to permanent dysfunction and possibly the ongoing pain?"

CW: I mean the —

APM: If I've got that wrong, Emily, please just send that in again because I'm reading from what I think is a transcript of your question.

CW: I don't work sort of with fascial planes. So I wouldn't want to comment on that but…I mean the only thing that ties in…if we're talking about sort of muscle spindles…is that what's being referred to with Golgi bodies or —

APM: Golgi tendon organs, yes.

CW: I mean there's a pretty good body of research that's demonstrating that people who've had a whiplash injury, about ¾ of them will complain of dizziness, unsteadiness, lightheadedness and I think when these people are looked at more closely, they have problems with eye movement control, ocular motor control. They have problems with proprioception of the head and neck and their postural stability's affected. So I hope I'm kind of answering your question in a way but this is something that's very important to look at in any whiplash patient and about ⅓ of atraumatic neck pain

patients will have this problems as well and we think this relates to muscle spindle output problems arising from pain in that area. And you can assess this in different ways. Obviously, setting postural stability's relatively easy. You just look at someone's posture, ask them to close…standing posture, ask them to close their eyes, see if the sway increases. You can ask them to minimize the base of support, put feet together, close your eyes, like a Romberg's test or even do a tandem stance with one foot in front of the other, toe-heel kind of standing and eyes closed again which is quite a challenging position.

APM: So is this a standard protocol for you with someone with what might be…what we're calling a whiplash injury.

CW: Let's call it whiplash injury. So yeah, I would start with standing balance with people with neck pain and whiplash injury, yeah. I just say, "There are some balance receptors in your neck and they can be affected by the pain you're having, so I just need to check your balance," and that might be something I go through and time them to 30 seconds in one of these stance positions and see if they can achieve that time —

APM: And will you go through all three of those, a wide stance —

CW: No, I'd pick one, yeah, judging…use my judgment on how they walked in and the kind of…levels of pain they're describing and then we can go on and assess proprioception of the head and neck. So again, this is an area that's been researched using quite complex laboratory experimental equipment, fast track electromagnetic equipment, and Zebra's ultrasound system. It's very complex —

APM: Zebra's ultrasound —

CW: Zebra's ultrasound systems, these are laboratory pieces of equipment, very sort of esoteric and complex to set up in the clinical setting but more recently, people have been just simply attaching lasers to the head, seeing how that fares compared to this laboratory experimental equipment. It seems to be standing up quite well in terms of validity and reliability. So it looks like we've got quite a good clinical test there. I'll just show you a video of someone…a laser video of someone just practicing this test of proprioception. So there's a laser attached to the head there and they've just got their eyes closed and they're trying to return to the center if that target.

APM: Oh, OK. I think he's cheating. That was pretty good.

CW: I thought he was peeking as well, yeah but…so you're doing the test with your eyes closed, trying to return to the same position and space, exactly the same way you'd assess proprioception in the elbow or the knee if you

wanted to go that far. You'd ask someone to return to the same position and space.

APM: And if you did this with someone who was uninjured, how accurate would you expect it to be?

CW: It's a very good question. I mean this is the problem with some of these tests, isn't it? A lot of what we do, sometimes you find these on normal, healthy people and so what does it mean? The research seems to suggest that the more trials you perform of this…so he was performing left cervical rotation and coming to neutral. I do three repetitions and take the average in the clinic. So I'll do 3 to the left, 3 to the right and take the average. That seems to be meaningful. The literature suggests the more of those you can do and take the average, the better, 6, 8 or 10.

APM: So in between each of those repetitions, he's opening his eyes and centering the laser again and then repeating the —

CW: That's a very good question. You keep their eyes closed so they don't get visual feedback and you're relocating it manually to the centre. So the laser's back on the centre. So from the start to the end of the test, they don't open their eyes. They're only going by what position they had starting in, the feel of that.

APM: You know, I think I might try that on myself because it sounds really challenging.

CW: It is. It's quite hard, yeah.

APM: Obviously I'll have to get someone else to do my head.

CW: So if you're at 90 centimeters from the wall…

APM: That's the correct position —

CW: Well, that's the distance that's used in the literature. I think it goes back to three feet, probably an old one and that's why it's not 100 centimeters, a meter but if you're 90 centimeters from the wall, you should fall within a circle of diameter of about 4 or 5 centimeters. That should be about normal. So I've got a slide of the target just to…there's a slide of the target that I'd use. So if you're 90 centimeters away from that on a…I printed it out on an A4 sheet of paper, you should be within that dark dotted ringed line.

APM: And that's four centimeters in real life.

CW: It's 4 or 5 centimeters, yeah. That's right, yeah.

APM: Bear with me for saying that. I've got a whole lot of questions come in. One is have you any knowledge of a research on the effectiveness of relaxation, breathing exercises in reducing central sensitization following a whiplash via stimulating parasympathetic drive. That's from Mike Bourne, Mike, hello.

CW: That's a very good question, Mike. I think my thinking clinically and a lot of people who are researching sort of the cutting edge are really at this point now of looking at relaxation training, biofeedback training in terms of desensitizing a sensitized central nervous system. So I think we're at that point now where we're realizing that these people who have ongoing problems following this kind of injury are presenting with a sensitized central nervous system and what can we do about that. It's certainly something I use clinically with patients who have ongoing pain. I know a lot of clinicians use that but to my mind, I don't think there's any evidence in this group of patients that it's effective. There's no published studies on it yet.

APM: And it's not a technique that you use in your own —

CW: I use that across all musculoskeletal conditions if I identify it's a problem, yeah, relaxation.

APM: Zara Ford has commented on the thing we were talking about, the relative effect of frontal impact or rear impact and she says because of the difference in the structure of the car that could easily affect it as well. Very stiff at the front with the engine and very soft in the back and designed to fold up.

CW: Good point.

APM: Another question about seatbelts is what's the difference in effect between the old style where they're fixed and the new style where they're sort of inertia reels and so on? Do you know?

CW: I mean one school of thought regards the seatbelt as not being very important.

APM: Really?

CW: Yeah, for —

APM: Even though it could be over a different side if you're a passenger or driver?

CW: For this kind of injury. For the lower speed injury, certainly and when you look at the studies that look for risk factors for ongoing pain following whiplash injury, it's unusual. There's some evidence that not wearing a seatbelt can be protective but I mean I think that may just be an incidental strange finding. It doesn't really make sense. The seatbelt doesn't really come into play when you're talking about a rear impact collision because

you're pushed into the seat. It may have a role to play when you're…the rebound phase of whiplash when your head's coming forward but not…I don't think at a lower speed, if you imagine what we saw in those films.

APM: I suppose I ought to know what happens here but if you have a rear impact in a car, I presume that triggers the airbag —

CW: No, it won't, no.

APM: It won't.

CW: Front impact. Yeah, it's triggered from the front bumper, yeah, in most cars.

APM: So actually, you could argue that in whiplash, it would be quite useful if the airbag was triggered maybe slightly later so that as you get that recoil—

CW: As you come forward, yeah.

APM: --it's preventing you from going too far. OK, we can't get on that line because we don't know. I'm not sure if this follows on from a question I asked earlier or whether it is actually the same question I didn't read out properly. It's about the severity of symptoms related to direction of impact and the questioner says that…she asks or he asks because she sees greater severity if it's a side impact than if it's rear or front. Any thought —

CW: I mean it's a good question, again and it's really important to think, to reason the mechanism of injury in the presentation, I think that's very, very important. I think I would probably play side impact alongside, excuse the pun, rear impact, so probably at greater risk of higher levels of pain and dysfunction compared to a frontal impact where you can see what's going on and the body tends to fall more naturally into a flexed position I think than side flexion —

APM: And as you said, the body is better at stabilizing against forward flexion, isn't it?

CW: I think so.

APM: Rather than side or back I guess.

CW: I think that's right, yeah.

APM: This is probably the same person who asked us earlier on because the question goes back into spindle problems that we mentioned. Excuse me if I'm wrong there, if it's not the same person but the question is could the spindle problems that were mentioned affecting the head and neck be related to dysfunction in the upper cervical spine and perhaps inform the

osteopathic importance placed on the C2-C3 dysfunction commonly palpated. And you might decline to comment on the osteopathic —

CW: No, not at all. I mean I wouldn't like to comment on that because I'm not an osteopath and I've not come across that before but I think there's some evidence that…when we were looking at the proprioceptive test there with the laser attached to the head, there is some evidence I mean 1 or 2 research studies that demonstrate that perhaps those patients who have a poorer outcome on that test, perform more poorly may have more tendinous and discomfort when palpated in the upper cervical spine. So it may suggest that the problem is higher up in the cervical spine if they're having more problems with proprioception, and the test of proprioception. So there may be some evidence to support that, yeah.

APM: Is there any statistical reporting available on the incidence of injury at various levels on the spine?

CW: I think all we can go on there is, as we mentioned before, the radiofrequency neurotomy and maybe a couple of cadaveric studies where there's crash testing involved, what level appears to get injured there and what level are people having to block with local anesthetic and radiofrequency neurotomy. We're talking about probably cervicothoracic levels.

APM: You said the lower

CW: Maybe C5-C6 as well where most the movement occurs.

APM: A question from Fiona Cockings-Mason. Now we like Fiona because we use Fiona on our videos because she sits down with her husband who's not an osteopath and describes this as like watching TV, her favorite TV program. So Fiona, good evening to you. I'm glad you're watching. Her question is how often or how severe does the trauma have to be before you would need to refer someone for an x-ray or other MRI examination?

CW: So I think the answer with MRI is I would probably refer when I'm looking for an unresolving or deteriorating neurological picture from a disc or a nerve root and I think it might change the management. Anything short of that, I wouldn't scan. I don't think it's any benefit.

APM: How long would it take you to work out that you've got an unresolving problem and how frequently you're seeing the patients?

CW: Well, it's a good question. It depends very much on the patient. Most of the whiplash treatment management is hands off. It's giving people the sensory motor exercises, the proprioceptive exercises, eye movement control exercises, standing balance exercises, strengthening of the neck and maybe helping desensitize the neck, you know, using relaxation or some hands on

work but the foundation is the work they're doing. So, you know, it's probably…might be 4 times, 6 times over a couple of months would be quite a lot of treatment I think and I think the literature strongly suggests we need to maybe take a step back, that more treatment probably produces…there's some evidence it produces more harm. It leads to poor outcomes as does early scanning, there's some evidence in back pain and if that's the case I think —

APM: Early scanning?

CW: Of —

APM: Worsens the outcome.

CW: It leads to worse outcome in low back pain. I'm not saying it does in whiplash but the general feeling is amongst people who are injured in a compensation setting, that perhaps going too far down the road of a structural approach telling people what may be normal findings in their spine making them more fearful about the pathology, the suspected pathology, make them more fearful of moving and exercising in a relaxed way. I think these are coming across as very important factors in the literature. So I'm very reluctant to scan. X-rays, I would send someone for an x-ray if I thought they had a fracture, for no other reason and you're looking, again, at very high velocity accidents, rollover situations in this sort of motor vehicle collision scenario and you're looking at tendinous over the spinous processes of the spine and a restricted rotation to 45 degrees or less. So this is the Canadian C spine rule, which is a very clear pathway and a very high sensitivity and specificity for diagnosing fracture.

APM: And is that it? Reduce rotation to 45 degrees —

CW: It's roughly what I've said, yeah. There's about 6 or 7 items in each pathway but it boils down to basically if someone's got very stiff and painful rotation, less than 45 degrees, if they've been in a rollover or very high speed —

APM: So it has to be associated with that mechanism.

CW: Combination, yeah.

APM: I wondered if I should be worried about some of the patients I've been seeing.

CW: yeah, it's just a bit of a stiff neck.

APM: You mentioned exercises there and we've got a question about exercises from Jason. What about sporting activities or other rehabilitation activities?

What's recommended? And on the list here, there's swimming, weight training and things like that. Does that help with recovery or —

CW: I mean I think it's a really good question. I think the only reason we'd need to be careful in recommending activity might be in that subgroup of patients who have post traumatic stress reactions and widespread central sensitization. There is some evidence that aerobic exercise can make them worse, can increase their pain. So there's some research around that. So it's worth bearing that in mind if someone is presenting with widespread pain, high levels of pain disability. It may be a post traumatic stress reaction. They're the sort of person that you touch and they flinch and they're hypersensitive. They may not respond to an exercise based approach. So for the rest which is probably about 80% of patients that you see, early activities is probably top of the list, you know, good thorough initial consultation, lots of reassurance and get them back to doing what they want to do and exercising as soon as they can and I don't think it's specific. If something they enjoy is probably more important than —

APM: You might draw the line at rugby.

CW: If they want to play that early and they can, that's fine.

APM: But that's a serious question. You're not worried about them causing themselves much worse injury?

CW: No, I think you'd need…and I was going to add a caveat there. We're talking about general exercises here. So aerobic exercise more in your leisure and not pertaining to the neck. Now if we're talking more about returning to neck based…that it's going to put strain on the neck so you might be…I suppose badminton or skydiving or as you said, rugby, wrestling, combat sports, you might want to start assessing neck strength and doing something simple like resisted tests, isometric test of the head. Does it feel stable in all directions? Is it pain free? These kind of tests can be useful in terms of just saying like, "OK, yeah, that looks like you're OK to return to the sport," but I think it's worth mentioning at this point that strengthening is a very important treatment approach for neck pain, full stop and also there's some research evidence coming up that it can improve recovery in whiplash injury as well. So strengthening of the shoulder girdle and the neck, doing head lifts, maybe attaching ½ kilo, 1 kilo. Ankle weights often fit around the head quite nicely; just doing some head lifts lying on your back and supine to strengthen up. In the same way you'd exercise in the gym 3 times, 10 repetitions can be useful.

APM: This is a more general question perhaps. Is there any research to show that 3 times, 10 repetitions actually has any more benefit than 3 very heavy weight repetitions —

CW: No, not at all. I mean I —

APM: It's commonly taught

CW: Absolutely, yeah. Absolutely, yes, a number that's plucked out of thin air and the only reason I mentioned it is because that's the prescription that's used in the research and that's the only reason I would use it. It's like the 90 centimeters for the laser. Obviously, you can deviate from that and I think the more you tend towards a strengthening regime, probably the more effective it is. So if you start to drop the repetitions and raise the weight, that's probably more beneficial but obviously, you don't want to be causing a lot of pain with these exercises. You want to keep the pain levels down to sort of 2 or 3 out of 10 on a visual analog scale score. The other point is that as regard strengthening is to strengthen the shoulder girdle as well, so the axial, scapula muscles. So you're looking at…the sort of exercise would be shoulder shrugs, chest press, fly's, biceps curls, bent over rows, these kinds of standard upper limb exercises. There's very good evidence base that these reduce neck pain.

APM: What do you do with a 90-year-old lady…let's say a 70-year-old lady who comes into the treatment room, who's never been near a gym in her life. And apologies to the female audience. It could be a 70-year-old gentleman who's never been near a gym in his life and you suddenly say to him, "Why don't you go and do some bench presses and some bent over rows," and first of all, he doesn't understand what you're talking about, do you have a simplified regime? Do you have some simple exercises you can get people to do at home?

CW: It's a good question. I suppose the way I introduce it is that, you know, I may start them without any weights to start with. So they'll have no resistance. They may use a very thin Thera-Band resistance tubing to start with.

APM: I knew Thera-Bands would come into —

CW: It's going to get in there somewhere. It's very practical. It's not heavy to carry around with you. So I think I would introduce it in that way and talk to them about the evidence base, "This is a really effective treatment for neck pain and we think it may help whiplash in an enormous amount." And I think it's probably the top of the list for treatments.

APM: You only described forward flexion exercises for the neck a moment ago. I mean do you give exercises in other directions using Thera-Band or ankle weights —

CW: Yeah.

APM: Same sort of thing, just side lying or —

CW: Absolutely, just extension, yeah. Absolutely right, yeah, extension, side flexion. If it's important, you assess its weak, if it's related to the mechanism of injury and you work in those directions, yeah.

APM: And you have people working with Thera-Bands with that in that view?

CW: No, doesn't stay on the head but there are —

APM: Well for the more hair suit of us it is a problem.

CW: Perhaps, yeah, it doesn't stay on the head, yeah. So there's different ways. I mean basically, there's some…Thera-Band do like a harness you can attach to the head which you can attach Thera Tube to and that's very useful in clinic because you can do rotation with that but most people are fine…I mean I tell some people just fill a sock with some sand or rice is heavy, water bottles are heavy. Some people use a scarf with a couple of water bottles hanging off. You know, ½ a liter of water's ½ kilo. So a couple of those, you can tie those to scarves around your head, that's fine and do some head lifts in any direction with those or the innards of a bicycle helmet. You can buy those separately, you know, with the ratchet on. So that gets a good hug and you can just Velcro a couple of ½ kilo weights to those. I've been through all sorts of experiments with attaching weights to the head.

APM: What finds most favor with the patients?

CW: I think most patients, to be honest, probably the weight of their head is enough for them to rehabilitate. I like to get people adding a little more weight so that they're…in their comfort zone day to day.

APM: As I understood it, certainly up until a year or two ago, all the evidence suggest that you can prescribe as many exercises as you like but they don't get done. Do you find that with your patients and do you see a difference in the progression between those who do the exercises and those who don't?

CW: It's a problem, isn't it? Compliance, it's a very, very big problem. So I think there's a big difference between those who do and those who don't do the exercises in terms of outcome. I think that's probably true. I think a lot of…how do we improve compliance, that's a whole talk in itself, isn't it? But I think that explanation and demonstrating the value and the evidence base, "Look, if you do this, the evidence suggests you'll be 80% better in a year and then you don't have to do them anymore —"

APM: Well, that in itself is an instructive piece of information there, is that you're immediately telling a patient, "You're going to be with this for a year before you're 80% better," which can be quite depressing for a lot of people, isn't it?

CW: Yes. I mean I was referring then to people who come with chronic problems, so, you know, people who've had this problem for years often that come in. I wouldn't spout that out to someone who's had an injury just a few weeks. So, you know, in that scenario where someone's had pain for a number of years, I would, you know, say, "You're going to improve a lot over that, you know, the graph will be heading upwards but your 80% may take a year to come," yeah.

APM: Very interesting how you approach that communication with the patient, isn't it? Because on the one hand, you want to be realistic but at the same time, you've got to give them the incentive or the motivation to cope with the injury that they've sustained. I can imagine a lot of patients being very depressed if you told them they had to wait a year for 80% recovery and that they need to hit the Valium more than necessary.

CW: It's an interesting point. Professor Lams team who are now at Oxford, Esther Williamson did a very large study for her PhD of 600 patients and she went and interviewed some of them to cover the qualitative side of her study and what she found was that a lot of people were…when she followed them up at the end of the year, were a bit disappointed…some of the patients were disappointed that they hadn't been told that it could last that long. And she was quite taken aback by this that a lot of the physiotherapists in the study was saying, "Oh, you'll be fine. You're going to get better. It takes three months for it to heal," and when the pain was ongoing past that point, the patients were often thinking, "Well, I'm not better yet so there must be something wrong with me because I'm not getting better." Once she had that discussion with them, what came out was the fact that, "Oh, well, if they told me it would last six months, I would've been so worried about it." So, you know, where do you pitch these? You've got to remain hopeful whilst telling people —

APM: And as you said, I mean if you read about this in whatever online forums you can find, some of them will say well, whiplash can last for seven years and you mentioned I think five years earlier on as being not untypical in some cases.

CW: It's possible.

APM: So yeah, as you've said we have to be realistic. One of our question, we might have overtaken this with your discussion of exercises but the question was…earlier on, you said you had a very hands off approach and this question is about…are you saying that there isn't a role for us? It's just non-steroidal and other drugs that we need to use?

CW: So when I say hands off, I think it's very important to have a quality consultation and be, you know, thoroughly assessed by a clinician and I think the research suggests if you're in that low risk group then getting back to

exercise, getting back to work and perhaps trying to screen for sensory motor problems like the proprioceptive problems, sensory motor problems like ocular motor problems, posture, stability, weakness around the neck, that's where we want to be looking at and how sensitive is the neck. Does that need some local treatment; hands on work there to help speed up the recovery, get someone back to work quicker? There's some evidence that that's where that's used for in terms of in the early days. If you're dealing with this subgroup of patients sometimes termed complex whiplash patients who've got this widespread sensitivity, post traumatic stress reaction, those are the people who need a lot of…sort of more of the psychophysiotherapy we might call it, you know. Shall we call it psychoosteopathy? I don't know. Is that the term that's used? I don't know. So it's something that you need to be aware of to try and get a handle on exactly what is the problem with that person. Are they catastrophizing? Is it a post traumatic stress reaction? And you do need to…the literature says just hit them hard with pain relief. They need less pain going through their system to recover and it's really… Is the system up for dealing with these patients and managing these patients at an early enough point? I think we're all becoming much more cognizant that these patients are going to chew up the resources in the future. They're the ones that cost a lot of money in terms of investigations and treatment and the earlier we can identify them, the quicker we can get them to if they need psychological input, if they need sort of neuropathic pain medications like the amitriptyline or gabapentin, pregabalin. Get those earlier; get them some good advice and a supportive, therapeutic relationship.

APM: And what's your relationship then…you mentioned you've got a doctor who's also an osteopath working in your practice but what's your relationship with local GPs when you say well look you know, "I think this person needs amitriptyline," or do you simply say they need some strong pain relief and leave it in there hands
?

CW: I'd leave it to them. I don't prescribe, yeah. I mean I don't know what your position is but —

APM: The same.

CW: Five years ago, you couldn't get anyone on these things and now everyone's on then, you know.

APM: What's your perception of the GP's understanding of whiplash injuries? Is it as simplistic as you might read on, I don't know, WebMD or something —?

CW: I think it probably is.

APM: Well, I mean —

CW: I think it probably is. I think when you specialize in this area, as the viewers do and yourself, you know, you realize how complex these problems are. You're dealing with individuals in pain and we're just touching on it today, really, the complexity and I think GPs do a fantastic job in a really difficult situation, you know, incredibly high volume throughput, you know, they're dealing with ostensibly a soft tissue injury aren't they. So how are they going to manage that?

APM: Well, you talked about the need to get rapid pain relief into many of your patients and of course, there is that long-standing protocol of RICE for any soft tissue injury. Focusing on the rest element of that, where do you stand on neck braces or other immobilization of the —

CW: It's a really good question. Gwendolen Jull who's now retired, she was a professor of physio at Queensland and oversaw a lot of this research we're talking about today, a real groundbreaking physiotherapist. She's just recently written an editorial, commenting on the discord between peripheral joint injuries, the apparent discord and what the recommendations are if you sprained your knee in a rugby match but…you would put ice on it and rest it but if you had a whiplash injury on the way home, you'd be advised to carry on being active and you wouldn't put ice on it or rest it. So I think that's very, very interesting. My own personal thoughts are I do wonder whether we are managing it incorrectly. Now there are some quarters some people, authorities suggest that perhaps we've been… as I've touched on; we've been too structural in our approach with whiplash. Perhaps we've been frightening people about what's going on in their bodies and perhaps not reassuring people enough. Perhaps we've contributed to, you know, the levels of disability by doing too much, getting too involved. So that's one argument but dare I say that perhaps, you know…surely there's a soft tissue injury occurring and surely, we can somehow manage that in the way that parallels our treatment of peripheral joint injuries. So my position is no, I don't give collars and I do advise people to keep active but in the back of my mind, I do wonder whether, you know…people talk of pendulum swinging, you do wonder whether in some people, it might be worthwhile, advising them to rest if things are just too painful —

APM: Isn't the real fear that people become too dependent on a collar. If that relieves a lot of their pain, it would be very difficult to get them out of it again which would lead to an even greater instability.

CW: Absolutely right. I think that's the big fear.

APM: A question here from Claire. Do you see cases where a road traffic accident can lead to cardiac changes, increased blood pressure and so on? If so, what would be the mechanism for that and in your experience, are these changes temporary or can they be permanent?

CW: Now I've not come across that clinically or in the research, you know. My thoughts would be around some sort of autonomic sort of arousal there, perhaps. I would be thinking around perhaps post traumatic stress response and sort of sniffing around there if the person's still having intrusive thoughts or nightmares, general hyperarousal.

APM: You're not aware of the research identifying this as a particularly associated problem.

CW: I'm not aware of any that's been published on that particularly, no.

APM: Matthew's come in with an interesting one here. Matthew again, he said, "Have you tried a stocking over the head with the weight in the toe? They did something like this on Celebrity Juice," whatever the hell that is.

CW: Well, you could try it.

APM: You might like, Matthew, to send us in a photograph of yourself with this stocking and weight.

CW: That'd be useful.

APM: Because I'm sure everybody will be very entertained to see that and to learn from your demonstration. I want to take you back, if I can, Chris, to your examination procedure, which you mentioned earlier on. You've done proprioception. So you've done wide base, narrow base or tandem base. You've done laser on the head. You're going to do both of those exams so that you can report to somebody, "I have done these exams and I have found this to be outside the norms for someone of this age." What else would you do in your assessment process?

CW: That's right. So I'm sort of encroaching them. We're just trying to get a picture, build up a picture. We're not relying too much on any one test to get a feel for someone who has sensory motor problems. So the other one…if I get this slide up, I talked of the three pillars of sensory motor control. So there's proprioception of the neck, there's ocular motor control of the eyes and there's postural stability control of postural stability. So one of the tests you can also do…if I play this video here of the smooth pursuit test. So you can ask someone to sit still. Many clinicians are familiar with this test anyway. Keep the head still and follow a moving object with their eyes. So this is the smooth pursuit test and this has been widely investigated in whiplash patients and it's found that whiplash patients will often feel dizzy, they'll have an inability to follow the moving object smoothly so that it'll look blurred to them. They may have to stop looking at it because they feel so sort of lightheaded.

APM: So they're not following it smoothly, their eyes will jerk at some point—

CW: That's right.

APM: --rather than continue in a nice smooth pattern.

CW: That's right, absolutely right and this is termed a saccade. So when you're performing the smooth pursuit test, your eyes should be moving smoothly. It shouldn't be moving quickly. Obviously we do perform saccades when we're looking at fast…looking around the room or moving our eyes quickly. That's normal but when you perform the smooth pursuit test, you don't want to see a saccade. So I've got some film here of a patient performing the smooth pursuit test and as you can see, if you look at his eyeballs moving, they're moving slowly, probably going a little bit quicker than I want to. It's sort of with a patient who has —

APM: Moving his head, of course, a little bit.

CW: Moving the head a little bit as well, yeah, well spotted. So a progression of this test is the smooth pursuit neck torsion test. So just stop that video, get the other one lined up. So the smooth pursuit neck torsion test refers to doing the smooth pursuit test in neutral and then rotating the trunk under the neck. So you keep the head still and you rotate the trunk under the neck in order to stress one side of the neck and the thinking is that because you're stretching the muscle spindles on one side of the neck, it's producing more incorrect input into the central nervous system.

APM: That sounds a really complicated thing to do as opposed to just turn your neck and do the smooth pursuit test.

CW: So that's a very good question. The reason for that is so you don't disrupt the vestibular system.

APM: I see.

CW: So you don't want that to confound your results. So you keep the head very still, move the trunk underneath to stretch the neck musculature and repeat the smooth pursuit test in that rotated position.

APM: So it's handy if you've got a seat with a swiveling base in your —

CW: Office chairs, absolutely key, yes but otherwise, you can do it on your normal treatment plinth. So let's look at this patient now who's sitting in this rotated position. So if you look at his eye movements again, just jerked a bit at the beginning there but you can see that —

APM: There's a big jerk there.

CW: He's losing that smooth control with his head rotated. And this is a good diagnostic test for whiplash patients who experience dizziness. So the sensitivity and specificity of this test is over 90%. So it's a good diagnostic test for whiplash patients who have dizziness. If you have a vestibular problem that's making you dizzy, it won't change if you torsion the neck. So that's why this test has been devised —

APM: I see what you mean, yeah.

CW: It's a very useful clinical test for trying to identify any dizziness or unsteadiness that's arising from the cervical spine.

APM: So we've got now…is it four tests? We've got two balance tests. We've got the laser…

CW: Proprioception.

APM: Proprioceptive test and I suppose these are two similar tests here, are they?

CW: Yes that's right.

APM: And then what? You're going to do normal passive and active motion on the neck, palpation?

CW: Yes, that's right.

APM: Are you a manipulator?

CW: Yes, I manipulate. I can't remember the last time I manipulated a whiplash patient, to be honest. I mean the thing about whiplash studies is that, you know, they're pulling everybody in and everybody's different. Everybody has a different mechanism of injury. Sometimes you get people in who have got a mechanical problem, you know. They're still looking over their left shoulder and it appears something just need loosing off and by all means, use all manipulative techniques at your disposal —

APM: I'm surprised actually that we haven't had a question, given the nature of…the bulk of our audience about manipulations. Of course, manipulations vary from practitioner to practitioner as well, don't they? And, you know, they vary from the Laurie Hartman quality. I don't know if you're familiar with him. His quality of manipulations to the newly out of college or just past their grade five course or whatever it is that physios do which can be quite frightening sometimes. I wouldn't think you want to apply those in a suspected whiplash —

CW: No. The only thing that comes to mind is some of the evidence around cervical arterial dissection. So there is some evidence that the whiplash

mechanism of injury can increase your risk of having a stroke arising from cervical arterial dissection anyway. So we need to be very suspicious of anyone coming in who's had trauma to the neck and obviously, there's this alleged association between manipulation and cervical arterial dissection. So we don't want to miss that if someone's coming in with that pathology I think.

APM: But you did say that the bulk of the patients that you see have got lower cervical or cervicodorsal problems anyway which is less of a risk. I'm not saying it's not a risk at all but…yeah, OK. We've gone through passive-active examination. Do you do muscle stretching as part of your protocol for this or again, as you said, hands off and —

CW: No. I'll assess active range of motion. One of the tests I'll do supine is the flexion rotation test. So this is a useful test that's come out of some of the physiotherapy headache literature, Toby Hall's group in Australia published on this. So you literally just flex the cervical spine fully passively. So chin on chest position with the person supine and then you rotate cervical spine left and right and that's pure movement of C1-C2 occurring with that movement and they validated that in an MRI scanner. So they've got people in they're moving heads and showing that it does just move that. So that's a really nice test to identify restriction. You should get around 30 degrees, 40 degrees each side comfortably. If you're getting less than that then it's suggesting dysfunction at that level.

APM: And you expect it to be symmetrical too, more or less.

CW: Absolutely, yeah. So that's a useful test I'll do supine. I may palpate sternomastoid, scalene, thinking of this eccentric contraction that sternomastoid carries out as the head's being pushed back in whiplash. Sometimes you get some sensitivity in that that needs working on. And then prone, I'll palpate the levels and try to identify the most sensitive level.

APM: Core stability?

CW: Core stability, no. I can't remember the last time I used that.

APM: I always throw that in when we have a physiotherapist in just to see whether —

CW: To see where they go, yeah.

APM: Just to tease it. You are a bit of a rarity in terms of our guest but very often; the people we have in are here with something to sell. They run courses. They're flogging books or something else like that and certainly, you might have those things but I'm not aware of them, so…but you did mention earlier on that this is a complex area of examination, of diagnosis and of treatment.

What should our audience be looking at doing? How can the, you know…some fairly experienced practitioner, how do they improve in their treatment and assessment of whiplash?

CW: Well, I mean in terms of the resources I have, I have a free website and blog which is chrisworsfold.com. A lot of these videos are available there, free to watch. I've got some of them on YouTube which you wouldn't have difficulty finding. So the blog's the place to start and I've got…some of the papers I've written, I've got out and I've updated them and they're on pages. So you could get a really good handle on where we're at with whiplash and neck pain by starting there. I run a two-day course around the country through health education seminars and there's my speaking stuff on the blog as well. So that's a place to start. In terms of books, there's not that many books around that really will point to you down the clinical route of what to do I think. I think there aren't, you know, very good description, hands on wise. I think perhaps the best way to learn is to look at some of the update review articles. Michele Sterling did a good review recently. I think it was in the last year of, you know, where we're at with whiplash and all the different areas we sort of touched on tonight in terms of triage and sensory motor and strengthening and those complex whiplash patients.

APM: What's the quality of the research that's coming out as opposed to the volume? I mean would you say it's good quality stuff that we can find in the research journals these days?

CW: Well, it's a good question. I mean the sort of hands on treatment of whiplash has taken, you know, depending on where your sitting, a real kicking in the last few years and there's a UK trial called the MINT trial which looked at very large multicenter trials, demonstrated no change with physiotherapy compared to education, advice leaflet in acute whiplash and in Australia, chronic whiplash patients, again, very comprehensive program showed no difference, no change with a controlled group and another Australian large study, these are all high quality studies, demonstrated very little change with sort of a pathway that we've been describing today. So neuropathic pain medication, counseling earlier on if they needed it, strengthening, sensory motor work showed very little effect and the researchers were obviously stunned because these were people who had vested interests in this being successful in terms of these treatment approaches, the physiotherapy —

APM: Well, there is of course a role and you've talked about this very eloquently. There's a role for the physical therapist in educating the patients as well and that doesn't mean to say that you don't need to do any physical therapy but, you know, if part of your role is explaining what might've gone on under the skin as part of the accident and how long it might take and all that is part of the recovery process.

CW: I think that's absolutely right. I think, you know, these studies, we could fall into the trap saying, you know, the hands on doesn't work or the physiotherapy doesn't work or the osteopathy doesn't work but it's not it's saying that what was done in those trials doesn't work and we've got to get the dose right. It doesn't mean stop seeing people. People are always going to go to people with pain problems, aren't they? It's just we've got to make sure we're doing the right thing in the right dose I think in the right way and what helps more effectively, efficiently, cost effectively.

APM: How do you approach the insurance companies? The last time I had to do this, I think…well, there were two instances, one where an insurance company Said 'Ok, we'll pay for six sessions of the therapy', six sessions of therapy and in the back of your mind, you're thinking, "Well, I don't like to ask for more than this," but this isn't a problem that's going to go away quickly. And then there's the other side where an insurance company's, "Well, how many sessions do you think it's going to take?" You bring your piece of string out of your pocket, don't you? What do you do?

CW: Well, I think they probably have it now that they give 5 or 6 sessions like a lot of BUPA's and AXA PP's off the whiplash subject are giving lots of treatment and requesting a lot of feedback between the sessions now. So I'll just state from the off what I think the person needs. I mean there may be a person who's got, you know…if someone's got 2 or 3 different body injuries, I'll be very clear they probably need 6 treatments on each one, you know, if we're going to be thorough on this and give it the time it needs. You have to be clear about that. So I'll just say as I see it. I try not to be restricted by what they suggest. Try and be as clear as I can from the off really and if it's 12 or 18, I'll say that but I'm not saying I do that on everybody at all, you know. That might be somebody who's got multiple areas that are injured, that needs that input. I think that's one of the problems is these people might say, "Well, I need to see you in six sessions," but you've got all these problems, you know. I'd encourage people to say, "Well, look, I need time with all these different areas."

APM: And how do you gauge the frequency of treatment for a typical patient if there is such an animal?

CW: Well, I would probably work very much on a hands off basis and try to get them doing the stuff at home and emphasize that that's where the change is going to occur.

APM: With assessments every…?

CW: Once a week perhaps, you know. Perhaps, you know, maybe next week then maybe a couple of weeks, maybe 3 or 4 weeks.

APM: Would you expect to see a change then? If you send someone off to do strengthening exercises and so on, would you expect to see a change within a week?

CW: I mean in the acute phase, you're managing…you're trying to triage that person, get a take on where they're at in the whiplash recovery. Which pathway they're going to go down? And it'll vary very much person to person. If I see someone who's had pain a long, long time and I see a lot of people who've had pain 4, 8, 10 years then it will be much more hands off. They may not need a lot of input. Sometimes their diary might be free for a month and they might want to come once a week to just learn more and to try and desensitize the neck a bit more and just to spend more time talking about the way forward, really but with acute injuries, you're more…in that 80% of people who are going to recover anyway in that time, you're trying to speed that up and that's a very sort of…just removing obstacles really and getting them back rather than being dependent on it.

APM: Chris, this has been a fascinating discussion, a topic which…I don't know. I think a lot of us feel we ought to be experts in because we've been through the standard training but it's refreshing to know that we aren't experts in it because there isn't an expert in this really, given the state of the research, is there? There's just greater or lesser experience and hearing what you've had to say is very useful. What we'll try to do is we'll try to put up the treatment protocols that you described in our website but also we'll direct people to your own website so they can hear from the horse's mouth, you know, what's going on in the current research and learn, as you said, just what they can do for patients like this. That's all we have time for this evening. So if I can thank you Chris for—

CW: Thanks Steven.

APM: --you're input this evening.

CW: Pleasure.