

SIJs and Piriformis **With Paula Clayton**

- APM: Welcome to our studio. It's a delight to have you here.
- PC: Thank you very much.
- APM: I thought I'd start...given the range of your experience with different levels of performance and I'm not sure it's not restricted just to elite athletes, if that's not enough, but also a whole range of clinicians. Why a book on sacroiliac joints and piriformis?
- PC: Good question. I think because over the years of working with elite athletes and also having private practice and then getting kind of asked to show and demonstrate why I do things and how I do things and then over the period of time, I was invited by national governing bodies and into some premiership teams to...they ask me to teach and it always seem to be the number one thing that they wanted me to teach was SIJ. So I think there's quite a lot of confusion around it. I think there's quite...people either know one side of it. They know the treatment side or they know the assessment side. They haven't necessarily put together, you know, all the puzzle pieces of how these things fit together and it seems to elude people. So in this book, I try to put the...well, the basics but I try to I guess clarify those puzzle pieces. I try to get all of the assessments in there from, you know, all of the latest evidence based clusters of tests. Then went into building people's clinical reasoning's with different types of kind of people understanding how the body and the different parts of the fascial...how all that comes into play and then also wanted to put into the book different things about different types of treatments, so different...people had different things from their toolbox but the reason I chose the SIJ was fundamentally because that seems to be the area of choice and I've added in piriformis syndrome because it does have a little bit of a marriage, you know. One can affect the other. So it kind of seemed to be the perfect thing to put in together.

- APM: So when you say you were asked to teach a lot about this, I mean who were you asked by, by the patients or by fellow physios, sports therapists?
- PC: Yeah, by fellow physios and soft tissue therapists. So I've gone into quite a few national governing body, sports teams and a couple of premiership teams, Man United and Liverpool and I've gone in and I've taught their physios and their soft tissue therapists and they always say, "Can you teach us something around the pelvis and can you really focus on the SIJ?"
- APM: You mentioned a lot of different things a moment ago and I have to say, you don't sound much like a physiotherapist to me because surely, you should be just teaching exercises and not fascia and —
- PC: That's very, very...
- APM: Well, I mean, you know, we all have our prejudices I'm sure in our —
- PC: Yeah.
- APM: Not prejudices. Our focus is within our own disciplines. Certainly the SIJ for all the osteopaths is a major part of training and I can't speak for physios but I suspect that a lot of us have perhaps forgotten why that is or at least would like to be reminded what the current evidence supports. What is so significant about the SIJ? Why is it a problematic area?
- PC: Well, with the SIJ and with the pelvis in general, it's where most of the load goes through the body. It's how the load is transferred through the body, how the gravity is transferred through the body, down into the legs. So it's something that can go wrong quite easily. When there is a problem there and you have this dysfunctional...and these adaptations. If you've got an upslip or you've got a rotation or you've got a downslip or you've got a posterior rotation, all of these things are red in the body in different ways and I'm very much, you know...you kind of touched on the fact, you know, surely I should be exercises but with my background in soft tissue therapy, you know...one of my very first courses back in 1994 is a Rolfing course which is a sort of soft tissue course. So we get to look at the body as a whole. So I tend to look all over the body to see what could be wrong. And with the pelvis and with the SIJ in particular, it has lots of potential for things to be not quite right. If the slings running through the SIJ are not quite, you know...things aren't working, muscles aren't firing correctly and you don't have that force closure with the...the soft tissues should be providing that sort of structural stability through the pelvis then other things go wrong and then you've got to deal with those and people will come in and go, "My knee hurts," or, "My shoulder hurts," or, "My neck hurts," and actually, it's coming from the pelvis. So it's always my go-to. I always have a look there first to see if that could be influencing some of the things that people are talking about.

- APM: We've actually had quite an early question from an old colleague of mine, Robbie Persaud who's an osteopath now in Spain for most of the time. To what extent does mainstream medicine still feel that the SIJ fuses? Do you know? You work with —
- PC: Yeah, hi Robbie you know, I think the kind of...the jury's out. There is, you know...they say that there's like, you know, 2° to 3° of movement. They say there's 1 to 2 millimeters of translation, 2° to 3° of, you know, rotation. Does it move? It's a joint, you know. It's got a synovial joint. It's a synovial area. The front, a fibrous area at the back, it's got a capsule around it. So it's a joint. So theoretically, it should move. As time goes on, does it fuse? I don't know. Don't know the answer to that question.
- APM: I was looking at a research paper into this where they had done some very careful analysis using...I can't remember the title of the...the name of the equipment but it was designed purely to measure tiny movement and I think the findings were that they found between 2 ½ and 3 ½ degrees of movement in the SIJ and you can read another paper which says, "Well, actually, we found that ½ of the SIJ fuses and the other half doesn't," and I fail to understand how either half can move if ½ if fused. I mean —
- PC: I agree and fundamentally, it's irrelevant because if somebody's coming in with pain and dysfunction in that area then whether the research says it's there or not, the person in front of you is presenting that and it's that person's pain at that particular time of their life on that particular day in that particular part of their training or that particular part of their injury and it is...whether it moves or not is irrelevant to me because if you're looking at pain in there or if you're looking at dysfunction, there's lots of other things that you're looking at to see whether that's being affected. So yes, I can understand people saying, you know, "Why are you checking to see if it's moving and why isn't it moving?" But for me, when I look at those kinds of assessments, I'm not just looking at whether the joint's moving. I'm looking to see what the tissues are doing in those joints. I'm doing this like...but I'm looking to see how the tissues are responding around that joint, to see whether things are contracting, whether things are moving in the area.
- APM: Because it matters to us. I'm speaking as an osteopath because of course, all we do is click joints as you know and that will annoy a lot of people. So we get letters about that.
- PC: That's not true.
- APM: We'll get letters about that but, you know, if it doesn't move, there's no point trying to manipulate an SIJ. Well, I guess there must be a spectrum, those that do and those that don't.

- PC: I mean I guess if you're talking about manipulation, there's a big question there. Should it be manipulated? You know, or should you —
- APM: Manipulated. All that physiotherapy expression. You're going to talk about mobs in a minute as well, aren't you? Yeah.
- PC: Adjusted. Cavitated, there we go. That's an osteopathic...so yeah, you know, whether it should be manipulated or mobbed is a question but fundamentally for me, I find I get the best results dealing with the soft tissues around the area and then if it's very, very stubborn then I'll look at doing an additional mob or manip but if it doesn't need it and I've got the results I want then I don't do that.
- APM: A moment ago, you said it's the first area you'll look at when someone comes in for treatment. So does that apply across the spectrum of your patients whether they're athletic or otherwise?
- PC: Yes. It's something that I have...because again, I'm looking for those global changes. I'm looking to see...if I'm getting somebody to do, you know...if I'm looking at somebody's lumbar flexion for example, why not then put my hands on there and do that at the same time? So it's something that I'm just looking at. It's not necessarily they've come in for that problem but if they come in for a shoulder problem and it's got some sort of insidious onset, they don't know what's happened, how it's come in, I'm thinking, "Could it be coming from somewhere else?" My mind is always thinking, "Is it coming from somewhere else?" So I start looking in other places and I just kind of like just...it's like an automatic thing, whether it's become a habit but it certainly serves me well.
- APM: And when you come to do these assessments, you know...we can have a look at how you might do these later on. I can remember being taught 3 or 4 different tests for the SIJ when I was in training. I think I've counted in total 25 tests which purports to give you an indication of whether sacroiliac dysfunction. What do you use?
- PC: So if I'm looking for a painful SIJ, there's a recent systematic review by Mango Foliar and they talk about doing clusters. Most musculoskeletal assessments now discuss clusters because most of them, if you look at a test individually, there's very few that have got high sensitivity and specificity and most of them, you know, are best...they're just kind of thrown up in the air and you're just kind of guessing, particularly a lot of the shoulder sort of assessments. So the kind of clusters that Mango Foliar talk about, the one with the highest sensitivity is the one with the thigh thrust and the one with the highest specificity is the distraction test and what they say is that if you do these two tests and they become positive then you don't necessarily have to take the patient or the client into another test just to irritate the joint. However, there's another systematic review around it about the same time

that talks about doing at least a cluster of 3 out of 4. So they say that if you get...one of those is negative then go into doing the kind of compression test and then go into doing the sacral thrust test. So I think that most tests now are saying if you do a cluster of three of most tests and they come back positive then, you know, you've got a good idea. So if those come back painful then you're looking at...it is a painful SIJ. When it comes to dysfunction of movement tests, the ones with the highest sensitivity and specificity are things like the stork test and the active straight leg raise —

APM: That's interesting because of course, for many people, active straight leg raise will be a lumber disk test but it's not quite the same test for sacroiliacs, is it?

PC: No.

APM: Because it is an active test apart from anything else. So perhaps we can come on to that in a minute, yeah.

PC: Sure.

APM: When you say a cluster of three, I mean 3 out of any those 25 or are there —

PC: No, 3 out of 4, 3 out of the 4. So you'd first go to thigh thrust because that's got the highest sensitivity. So this is highly recommended to do these two first, so the thigh thrust and the distraction test should always be done for a painful SIJ. Then if they are positive, one systematic review will say then follow that up with either the sacral thrust or with the...what's the other one I just said? The sacral thrust and the...

APM: Was it compression?

PC: Yeah and the compression test.

APM: The compression test

PC: So one of those to just kind of confirm findings. If one of the first two is negative then follow with a sacral thrust or a compression test so that you've always got three before you can actually say, "I think that this is a painful SIJ," but you've also got to include that. They're just tests. You've got to include that with all that subjective questioning and actually the presentation of the patient in front of you and put those puzzle pieces together.

APM: I read one paper...I say I read one paper. That makes me sound as though I've read the paper. Of course, I scanned the paper and I think it was from the early 2000's where it said actually the best...the most reliable test for painful SIJ is when the patient takes his finger and says it hurts just there and points to it which is...it's got a name, hasn't it? Fortin's test or something which is

probably quite a useful one in some way because, you know, if someone points to the SIJ and says, "It's painful here," why would you do your test?

PC: Yeah. Well, because there are...you do need outcome measures. In order to be able to...you need to be able to assess something. You need to do some sort of input and then you need to assess again to see whether your input has been effective, whether the pain has reduced or whether you've actually had a change in function. So you need an outcome measure and same with the functional...most people present with a definite, positive painful SIJ and likely going to have to go down the medical route and potentially have some injection therapy but those people with dysfunctional SIJs really...it might be painful but it's a different type of pain. The first one is a pain provocation test. The other one, you're looking at dysfunction but definitely, they come in and they're literally saying, "I just want to stick my knuckles in here." They sometimes sit with their legs crossed. When they stand up, they want to push their knees together in order to be able to stand up and all of these kinds of things come out in there...they come out in their discussions. They come out in the subjective and, you know, you're asking questions like, you know, "Is it painful when you walk?" because there's a recent piece of research that suggest that when you walk for more than 30 minutes which is sort of a dynamic load...but it's painful or if they stand for more than 30 minutes, 90% of people will say, you know, "That's painful," and that's a static load and then people who are carrying shopping bags, you know, they'll say, "That's painful," and that's like high 80's, the percentage of people saying, "Yes, that's very painful." So even with this kind of questioning...and it's kind of very qualitative which doesn't necessarily fit in the world of some of the research but it is very qualitative kind of questioning and it just starts to build the picture and then your tests are just kind of confirming that and then you're using them as outcome measures.

APM: A couple of questions have come in while we've been talking. One was, we just did which is what are the four tests, because whoever has asked this question couldn't write them down quickly enough. So I should actually emphasize that, you know, of course, this recording will go up onto the website and there will be a text summary of what we say. So they will be listed there as well but it was compression, distraction...the first two, of course—

PC: The first two —

APM: --the thigh thrust and the distraction are the first two.

PC: Yes, thigh thrust and distraction are the definite first two that you do and this is in Mango Folier.1 paper, 2009.

APM: It's also in your book.

PC: It's also in my book, thank you. So they're the first two that you do and then you want to follow them up. Getting a cluster of three, you want to either follow them up with a compression test or a sacral thrust test.

APM: And for the benefit of the one who...the lady or gentleman who just sent that last question, it's the thigh thrust, not the high thrust but we'll have a look at that later on. It's a relatively easy technique to demonstrate —

PC: Yeah, they all...yeah.

APM: As most of our viewers will know, the questions are anonymous unless you tell us otherwise. It's great of Robbie to say who he was earlier on, possibly because he and I know each other. I don't know Sarah but Sarah in France has asked whether you find that some of these tests mobilize the joint anyway.

PC: That's a good question. Hi, Sarah. That is a good question and I think it's going to happen particularly when you're looking at the pain provocation test. You are mobilizing the SIJ, absolutely but what I'm trying to get across here with the way I do things is that is just an outcome measure. It doesn't solve the problem in my opinion. It doesn't solve the problem to just manipulate that joint, which is what is basically happening when you do the assessment. It could be happening, I should say. My opinion is you have to be dealing with all of the soft tissue structures around that joint. You have to address the quality and the quantity of movement around that joint including the lower back and the hip. You have to be able to get full functional movement of all of the structures that should be providing that force closure to that joint before you can start to move somebody on. So just manipulating it, in my opinion, isn't enough.

APM: You talked about force closure there. There's force closure and form closure, aren't there? You might just want to explain what...those are terms I only came across about six months ago and I suspect those who more recently out of college will have heard them but explain what they mean.

PC: So force closure is where the sacrum fits into the pelvis and is like a block that's fit in a perfect slot and it is literally like a geometric, perfect fit.

*APM Correction: Paula accidentally gets the terms the wrong way round here: **Form** closure describes the way the **shape** of the pelvis and sacrum act to stabilize the joint.*

APM: It's a wedge.

PC: It's a wedge and it's a geometric fit and it fits there. That's the force closure. The form closure is the structures that surround that joint that actually works on that joint to support the stability. So your slings, your glute max, your

thoracolumbar fascia, all of the things passing through the pelvis and all the ligaments in the area, they offer your form closure and they hold you. They should be supporting that joint and it's when things go wrong, weaknesses and inhibitions happen but that doesn't necessarily happen.

*APM Correction: **Force** closure describes the way the **forces acting across the joint** act to stabilize it. These structures include muscles, ligaments and fascia.*

APM: You mentioned a number of structures there. There are, of course, no muscles, which directly affect the SIJ, are there? So when it comes to, you know...there's nothing that crosses the joint specifically they act indirectly on the joint. So what are the muscles, which we ought to be looking at, or considering in terms of increasing that force on the joint?

PC: So with my fascial head on, they do. They do cross.

APM: Indeed.

PC: So those three main slings that cross across the joint and act directly on your SIJ. You've got your posterior longitudinal sling. So that basically consists of erector spinae —

APM: We've got a picture of this, haven't we? Lets bring one of those up because I think...is that that one there?

PC: No, it's not. I sent them in the other thing.

APM: We haven't got a picture of that. So we'll just talk about it anyway.

PC: Sorry about that but they're easy to find and they are in the book. So the posterior longitudinal sling, that constitutes your erector spinae, thoracolumbar fascia, goes down through to your sacrotuberous ligament and then into your biceps femoris.

APM: On the same side or the opposite side?

PC: On to the contralateral, opposite side, sorry. So yes, it comes across and goes. So these slings basically cross the body. Then you've got your posterior oblique sling and this is the one most people know of. So it goes latissimus dorsi, you've got your thoracolumbar fascia then into glute max and that's a big player. And then you've got your anterior oblique sling and you've got things like...well, not things like. You've got your oblique's, internal, external, goes across into your abdominal aponeurosis or linea alba and then goes down into your inguinal ligament and into your adductors. So again, they all play a part. Those slings act very, very well to encourage form closure. Stability, strength, one leg standing strength, being able to hop, skip, jump,

run, they offer that stability around that joint. When any of those points are not functioning correctly then you can get a potential effect in your SIJ and it is just...it's also the musculature and, you know, kind of the fascial connections of the glute max which then blends into the ilia, that blends into the thoracolumbar fascia that blend into the latissimus dorsi all as one thing and again, like you've just suggested, if you look at...it's not on there. One of them's not on there but that's OK. If you look at a fascial line that is the spiral line, you can see where those...there is one piece of fascia that can come from the back of your head, cross into your rhomboids, wrap around the front, go down into your ilia and then it kind of wraps around your leg and again...and then in the functional lines, they also become, you know...if you look at the work by Stecco and the work by Myers, you can see that that's one piece of fascia. So they do influence each other through that, those chains.

APM: I don't think I mentioned to you earlier on. We had James Earls on one of our broadcasts a couple of months ago I think and he was talking a lot about this. And so that's the subject of one of our separate broadcast but where we didn't have the pictures now, we'll put those up in the text summary later, assuming James doesn't mind us using his images for that so that you can envisage those postural lines. Pain provoking structures then, we were talking about...you said that the inevitable route for a painful SIJ is to go through injection therapy or surgery or whatever. Well, what is it that's provoking the pain? Why can't we fix it?

PC: Because quite often, it's an inflammatory...quite a big inflammatory response and as we know, if things are incredibly...we can work on it. We can work on the structures around it but I'm loathed to be bouncing on a joint or working through...actually on the joint when something's so inflamed and just in my experience, people have presented with that and there's not very many people that present with true painful SIJ. You just have to look at the work of...oh, what are their names now? I forgot their names. It's terrible. The lady that wrote the pelvis book. I can't remember her name. You just have to look at their work and they are, you know...it's very rare that you've got true painful SIJ and I just know from experience of having that with athletes, they tend to go down that injection route. They tend to go and get prolotherapy. Also, people with hypermobility, it's truly painful. They'll go and get some sort of prolotherapy and yes, there is a, you know...it's a bit wishy-washy as to whether it's...it is massively effective but some of them are definitely better and some of them aren't necessarily better.

APM: Interesting you say that because I've just been handed a question from Graham who says that whenever he has patients with pain in the SI region, his findings are that 90% of these come from spinal referral rather than the SI itself and apart from inflammatory and rheumatological conditions, do you agree that the SI joint itself is rarely the pathology which I think you've kind of just answered.

PC: Yes. Hi, Graham So yeah, I think so and that's why I tend to work on the structures around the joint to try and influence the joint rather than the actual joint itself and it is rare that I manip or mobe the joint because the stuff that I do around it, hopefully, you know, has an impact. Well, it does in my opinion and then you give them home advice, which is kind of stretching, self-mobilization to kind of keep that moving and then the strengthening stuff to kind of help with that form closure.

APM: You're having quite an effect on our audience this evening.

PC: Really? My bra's not showing again, is it?

APM: We had an incident with a safety pin earlier on which were aren't going into again but normally, we don't get anyone tell us who they are and yet they're all telling us who they are this evening.

PC: Well, they want to be said hello to.

APM: This is from Maria who's in the highly exotic spot of Uxbridge who says, "What do you work on to stabilize hypermobile SIJs?"

PC: Hi, Maria. So a lot of the times, when you look at somebody that's got a problem with their SIJ, there always seems to be a glute max influence and strength in latissimus dorsi and glute max. So I quite often do a bridge assessment and I look at seeing what kind of accessory movements...I don't mean accessory joint movements. I'm looking at a double leg bridge and I'm looking to see whether they can actually control that concentrically, whether they can hold it isometrically and whether they can then go into an esometric lower and whether they can control that without swimming in their pelvis.

APM: An eccentric lower.

PC: And eccentric, right down to the bed, yeah, sorry. And I'm looking to see whether they're wobbling all over the place and quite often, they are and then just to confirm that and be really cruel, I then go and do single leg bridge to just prove my point. I do a single leg bridge and you will see an awful lot of lacking of control. So in order to add stability, it is literally tightening and strengthening. For me, what I always say is I like things to be long and strong but not too long. Normal length and strong. And so if those structures are weak that we're looking at then we add strong strengthening in there and it is...I peel it right back to the lowest kind of...their ability level and we build it up from there and then...because it's very important, particularly with elite athletes, that that stability is there because...I've worked with a lot of jumpers, high jumpers, triple jumpers, long jumpers and so they're doing an awful lot of stuff with one leg and they're pushing off masses amount of force through one leg. And so it's not uncommon even

after one training session to come in and things just aren't quite right and then we just do a little bit of jiggery-pokery, wake things back up, tell them the kind of things that need to be put into their pre-warm up kind of thing and then off they go again and that's where the kind of light performance therapy comes in.

APM: There's a section in your book on jiggery-pokery, isn't there?

PC: Of course there is. I'm not sure it's entitled that but that's what it is. So with regards to the answer to your question, Maria, yes, it's about strengthening the structures that influence the SIJ. So having a look at those, you know...the posterior lines and looking at, you know, the anterior lines and looking at those oblique lines, all of those things and think about the structures that are in those lines and make sure that they're strong and long.

APM: This question is from Leo who's in London but he says in brackets he's hoping to watch the next one when he's in Spain. So good luck to you on that one.

PC: Nice.

APM: What exercises do you get people to do at home?

PC: Right. Hi, Leo. So things like...so I'll do a bridge assessment and then I will get them to do —

APM: You're going to have to demonstrate bridge assessment to us in a little while I think.

PC: Sure. Yes, of course.

APM: So we'll know what you're talking about there.

PC: Yeah, I'll definitely do that because it's a really nice way of looking to see whether they can actually activate the glutes. So I do a bridge assessment and that will become one of the exercises. I always look at doing a front plank, side plank. And again, I do a thing particularly with athletes. I would do a Bunkie test which again is described in the book and it's not...it's been going on for a while and it's been picked up now by strength and conditioning. So I think that there'll be more research into it but it's not incredibly researched but it's got a decent 12-year long program of research and —

APM: In simple terms, a Bunkie test is like a plank but with a foot supported on...with your feet between a platform, is that right?

PC: Yeah, you've got a 30-centimeter platform. Ideally what you want is one that is like a little step so you can put your foot through it and you test the fascial

lines. So you'll test the anterior power line and all of the muscles in that line will be tested. You'll test the posterior power line and all of the muscles will be tested. You'll test the lateral line. You'll test the medial line and you'll test the posterior stabilizing line and basically, with an elite athlete, they should be able to hold all of those positions for about 40 seconds. Before that happens, if there's any burning pain, any kind of sensation, cramping, that's when you stop the test. What you'll normally see is one side will be 40 seconds easily and you just stop the test and the other side will be like 5 or 8 seconds or 10 seconds. You'll find out where the burning is. It's not always the area that's the problem and again, it's about the fascial lines and they do work. So if you're looking at the Bunkie test and you're looking at the...for example, the posterior power line, you're also testing this superficial back line here and all of the structures in there, OK? And if you're testing the anterior, you'd be testing all of the anterior structures. So if you know your fascial lines or you want to read up on them, it kind of tests those structures. It doesn't say that it does but it does.

APM: You've described those tests and we've all got in our mind an image of what those tests entail and they might be great for elite athletes and they'll be great for our elite cyclist who's come in to be your model for this evening but my 90-year-old lady patients aren't going to be very happy doing Bunkie test.

PC: No, that's true but I do use this on normal people too. I say normal people like people that aren't athletes are —

APM: People like us.

PC: Yeah, people, normal people. So I do use these on normal people as well and the beauty of it is it can then be used as a part of their strength program. It's quite easy to do. They could do it on something at home. So if they've got a line that's particularly weak and they're only be able to hold it for five seconds, you might then say, "Well, I just want you to do 6 3-second holds," and start to build it up. So you can actually give it as part of their strengthening thing and the other question they were asking about strength is...so yes, I use side planks, I use front planks because I'm trying to switch on the structures that are usually inhibited by dysfunctional pain.

APM: You've avoided the term core stability so far. Is that deliberate or...?

PC: Not really because most of the things that you do when you are using whole body like a plank or using a side plank or using a bridge even, you are actually engaging the core in some way but it's not a specific core stability stuff. It kind of just happens. So it's not like...yeah, I'm not particularly looking at like the traditional core stability exercises.

APM: I mean I noticed that in your book, you referred to Eyal Lederman on at least one occasion I think and his belief in functional exercises rather than trying to

switch on this muscle half a second earlier than it...or a millisecond earlier than it was before which is nice to hear

PC: But it's a quite, you know...those examples of testing, you know, when you're doing a glute test, for example, to see the firing pattern, they're a great outcome measure. So again, you just keep them in the back of your mind. They're not the be all and end all. They just guide you but they're a great outcome measure and the actual patient, client, athlete can actually buy in because they can see the difference and they can see that that is now changed and they're working on that.

APM: You'll like this. There's a comment from Jase in Norwich, which I've just received. He says that he wasn't aware until now that we couldn't see their details unless they tell us so I don't know if that means he's already asked a question but he says Paula's really good and he's enjoying the broadcast so —

PC: Thank you, Jase Thank you.

APM: Now here's one. This person hasn't identified themselves unless it's Jase In practice, do you see a difference between male and female SIJ pain presentation or is there any evidence of presentation ratio difference between the two —

PC: Not really. I wouldn't say I see a difference. I would say that it is pretty much a 50-50 thing. I know that females particularly, if they've had babies or they, you know...because of the, you know, menstrual cycle and at that particular time of the month, how, you know, there are softening of the ligaments and, you know, there is also...there's an interesting paper that suggested that people that are pregnant...not people. Ladies that are pregnant, that they get really tight hamstrings and that there's evidence that suggests that that's trying to force or put a force through your sacrotuberous ligament to try and offer some stability around your SIJ. So I think that quite often when ladies come in that do have this problem, they quite often have children and it's been an ongoing situation but equally, I see elite athletes and normal athletes that are having the same issues but they, you know...a lot of it comes to do with too much load. They've increased their load too much and their body can't absorb those forces and again, if you're not hydrated correctly, your body cannot absorb the forces that it should be able to do because —

APM: Sorry.

PC: Because the fascia and the thixotropic nature of the fascia and the kind of sliding that you need to be happening in there, that can be affected. So therefore, the load then can't be dissipated and used correctly and you have, you know...so it could be just somebody who's training, training, training, training and they're just running for fun or they're just running because

they're trying to, you know, enter a charity competition or it could be a massive race for them or it could be biking, whatever but fundamentally, if their load isn't correct, it can then affect...you can become inhibited because you're overloaded. So it can happen to anybody.

APM: So how do you measure their hydration then? Because that's a bit of a finger in the wind thing, isn't it?

PC: Yeah. Well, I have a discussion with them about hydration. You can feel whether they're hydrated or not in their tissues. You do have an element of...when you're working through tissues; there can be some bubbling and cracking. It's a bit like scrumping up a Tesco carrier bag. It feels —

APM: That's an extreme end of the spectrum though, isn't it?

PC: No, not at all. When you're working through soft tissue structures, there definitely is a palpable feel and also if you use lotion, they drink it really, really quickly but I always...I'm obviously always having a conversation with them about their color of their urine, you know, how they hydrate and the way to get to the bottom of that is to find out what color.

APM: Do you recommend a quantity of water per day? There used to be guidelines. It used to be something like two liters a day or something didn't it, which would make you pretty boggy by the end of the day if you weren't an elite athlete.

PC: You say that but I drink about three liters of water a day and I think that I've just found my happy medium and I think that I do...again, I speak to people about their urine and I try to encourage them to keep it straw like and if it isn't then drink more and some people will come back and say it worked well with 2 liters or 1 ½ liters and other people will say, "I'm drinking 2 ½ to 3 liters." So very individual, you know. We are physiological beings so it's very, very individual but I try to get people to hydrate quite well before I see them because it makes a difference in the response of the tissues.

APM: Do you drink your water neat or do you dilute it with something a bit more interesting?

PC: Neat, just neat, I'm afraid. On the rocks.

APM: A question from an anonymous viewer, how do you ensure that a "normal person", i.e. not an athlete, can do a plank properly?

PC: Good point. I'll ask them if they can do a plank and if they say, "Yes, I can," I'll say, "Can you show me?" And if they say, "I'm not sure," then I'll demonstrate it and if they are not able to do it, a full plank then I'll just get

them to do it on their knees. Most people can do a plank from their knees, even the —

APM: Do you recommend Pilates to people?

PC: Definitely, all the time.

APM: What about yoga?

PC: Not so much. Only because I've had a lot of people in with injuries from yoga because of the forced, you know, flexion, double legwork, particularly with people with low back problems. They do struggle with, you know, things that are done with double legs and then, you know, trying to pull your head between your knees.

APM: And do you think this is...this is probably a simple question to answer. Is this a problem with yoga or is this a problem with yoga instructors who don't really pay attention to their individual patients or students? Because I don't see that. In my own clinic, I don't see it with Pilates students.

PC: No.

APM: Because there seems to be less scope for people being pushed into a difficult position.

PC: That's a really good question. I think that whether the yoga teacher is good or bad or not so good is...it's not really fair to blame them either because you have a responsibility to know that you should not be trying to compete with yourself and trying to push yourself into really awkward positions when it hurts and people tend to think that they need to do that because they're looking at the person next to them and they're trying to copy them and I think people need to understand that it's not about that. It's about you as an individual and it's about...you know, again, we go back to function. Who needs to put their head between their knees? You know, in functional, who needs to do that? You know, it's not a necessity. So with Pilates, it's much more about staying long and strong which is what I'm a big advocate of and I don't think yoga is a problem if you are skilled enough at it and you do have an excellent teacher and they are...it's a difficult one. I've treated a bunch of yoga teachers because they get injured with their backs because of these positions and these...I think the strength yoga, the ashtanga I think it's called, when they're holding poses, I don't think that's an issue. I think it's the flexibility that sometimes takes people a little bit beyond their capabilities.

APM: I've always thought it's harder for an instructor to injure their clients in Pilates than it is in yoga because Pilates doesn't emphasize those huge flexions and so on but we did...our most recent guest was Leon Chaitow and

he does recommend yoga for his patients but he was very specific. He's not too sure about the more energetic and strange forms of yoga.

PC: The breathing

APM: Well, yeah, I was going to come on to that because he was talking to us about respiratory breathing problems and he did identify breathing problems as being part of the issue with sacroiliac pain as well. Is that something that you see?

PC: Yeah, definitely. I think if you're, you know...again, putting my fascial head on, I'm not sure if everybody out there is aware but out of the diaphragm comes these little fascial fingers that insert into the psoas and that's where, you know...it has a massive effect on stability and I just know from...when I was doing some placements and things like that, working on a fall patient and, you know, how we could influence their stabilities just standing and walking by giving them diaphragmatic breathing exercises and people seem to have lost the ability to be able to breathe with their diaphragm and they tend to be much more chest breathers.

APM: Why is that?

PC: I think that it's sitting, the way we sit at school and hunched over. It's easier to breathe with your chest. It's very hard to diaphragmatic breathe in this position. So posturally, it's difficult. I just think that...you look at a bunch of toddlers running around. They're all, "Whoa," their bellies are all going but we just all...it's all coming up here. So, you know, it could be pollution, asthma. There's all sorts of, you know, different things, that it could be stress, tight —

APM: There is a fashion involved in it too, isn't there? Because what we in the service, in my time in the service would have called the muscle boosts like have a big chest and a flat stomach. So they'll hold their stomach in and they won't breathe through their abdomen or through their diaphragm. They'll do it all through the chest because it looks much more impressive in the mirror.

PC: Yes, that's a good point but also —

APM: Do you advise your athletes about breathing properly?

PC: Of course, yeah, it's —

APM: Do they take your advice?

PC: Yes, they do because I test them afterwards, like, "Show me your diaphragmatic breath," you know. So no, it is really, really valuable and it's pretty impressive. You can do a psoas strength test and not do any

diaphragmatic breathing. Test the strength of the psoas, get them to do diaphragmatic breathing and all of a sudden, boom, there's much more strength in the psoas. So it wakes that baby up, you know. So it's a really, really nice thing. It's an easy thing for somebody to do as well. It's an easy part of their...just their normal every day training.

APM: One of the things that I remember Leon Chaitow saying which is perhaps less obvious, certainly a lot less obvious to me, is that...we were talking about breathing pattern disorders. So hyperventilation, over breathing and he was saying that over breathing which is common in the later stage in the menstrual cycle, it's more common in women than it is in men but it switches off transversus abdominis both in postural and phasic operation which has a big effect on stabilization of the SIJ. So rehabilitation of breathing is just as important...the manner of breathing through the diaphragm but also the way people can be educated to stop over breathing is very important which I have to say, I really enjoyed not what you've just said but that as well because it does make this feel a lot more holistic than just saying, "Your sacroiliac's painful. Let's whack it and see what happens."

PC: There's so many things that affect your body physiologically that you really need to...some of them are very, very simple to change. They're very simple and people will come back and just say, even just with the breathing exercise, "I've just got more clarity," you know. Their brain doesn't feel as foggy and they're drinking a little bit more. They feel more stable around their base. And so I think there's a lot to be said for that and again, talking about those fascial attachments and then obviously, if your diaphragm is attached to your...goes into your psoas and then it affects the linea alba. There you're going to have abdominal aponeurosis. You're going to have your pelvic floor. You're going to have your trans abs, all of those things are massively...there is a cylinder that goes literally from your diaphragm to your pelvic floor and they're all connected all the way down and if your breathing is incorrect, all of those things can be inhibited. So absolutely, totally agree with him.

APM: I've got to apologize to the audience now. I've just been bollocked. This particular question or viewer.

PC: I didn't answer it.

APM: This particular viewer who remained anonymous says he's had several patients injured from Pilates as well. So I do apologize. I've never seen anyone injured from Pilates. Gym classes do Pilates but have too many in the class which is—

PC: Good point.

APM: --often a problem with any class and it's not yoga versus Pilates. It's entirely the instructor. I do take that point, yeah.

PC: Yeah, it's a good point.

APM: If there isn't good supervision then all of these things can go wrong.

PC: Totally agree.

APM: What's this one? This is another question, different person. Are the fibrocytic nodules around the SI joint significant?

PC: I don't think so. No.

APM: Good.

PC: You're talking about those little jelly bits that, you know, kind of sit there, I don't think so. They don't seem to...I think the only time that you have a problem in that area is if it's very, very close to the cluneal nerve and it can irritate the nerve there, you know, if they become kind of inflamed or a little bit too fatty or whatever then the cluneal nerve that passes just slightly lateral to those can be impacted.

APM: Well, we're getting back to the exotics now because this question's come from Mark who says it's cold in Oslo which is —

PC: Hi, Mark.

APM: I don't think that's going to come as any surprise to anybody.

PC: No.

APM: This time of year, it's cold.

PC: You can go skiing soon.

APM: Do you do a lot of hands on work fascially around SIJs?

PC: Yes.

APM: Good. Well, that's a simple answer.

PC: Yes, I do. I use some sort of myofascial techniques that go literally from the shoulders because I try to engage the...let's get this picture up with the...so the picture on the left there, I try to...it attaches from the galea aponeurotica which is basically a nice name for just above your eyebrows. It goes all the way over the back of your head, comes all the way down the body and into your plantar fascia and this is one piece of fascia. So I try to work...I work from the shoulders down because it's very hard to massage somebody's

eyebrows. So I work from the shoulders down, go down into the SIJ to try and give some...because quite often, what you see is most people posturally are more like this. So the fascia up the back of the body —

APM: So that's the upper cross pattern with protracted shoulders and —

PC: Yeah, upper cross syndrome, yeah and that kind of thing but fundamentally, when you're standing in this position, everything up that back that we're showing there is too long and everything down the front is too short. So what we need to do is bring that back down and kind of shorten that thing so that we can not only put some slack...it sounds weird to say shorten and put slack in but we're basically bringing the fascia back downwards and giving a little bit of space around the SIJ but we're also straightening...hopefully, trying to straighten the body up and sometimes you have to work at the front in order to do that as well. So fascially, I work around there. I use my elbow and I glide down through the ligaments. I also use this lovely little baby tool here over the ligaments. So I get the beak end here and I work through there and I kind of wiggle through there.

APM: Hold on. This is a tool which you've stolen from London Underground which is used for breaking the windows in an emergency, isn't it?

PC: Exactly what it's for.

APM: Exactly. So it's curved. It's got a convex...sorry, concave groove down on one side, the opposite on the other and it's got that glass breaking piece on the end there. So why is that a useful thing?

PC: Well, when you're working with fascia, as most people will know, you're trying to influence those thixotropic properties. And you just have to look at any work from Schleip and Stecco and all of those lovely people that I absolutely adore, you know. Basically, they're saying that when you start working, putting your hands on fascia and putting pressure through that, whether it's a tool or your hands, you are then changing the...basically, if it's too thick and sticky, by putting pressure on that, it changes the polymerization and the depolymerization of the fascia. I'm sorry, they're really big words. I don't know how to say it any differently and these GAGs or glycosaminoglycans, they are hydrophilic. So they attract water. By putting pressure through the fascia, it attracts water and so therefore, you improve sliding. So whether it's your thumb, your elbow or this tool there, the reason...a lot of people will use this globally and everywhere and it's great for a pre-comp preparation because it makes people feel light but where I like to use this the best is around joints. So you can get in around fingers and around knees and around the SIJ and across the sacrum. Very hard to get your fingers in there and do that, excuse me. So by putting that through there, it increases that...theoretically increases that hydrophilic —

APM: That's the next thing, isn't it? The evidence that this is actually working or —

PC: Well, if you look at the research that...particularly people like Graston, they're a massive company. Literally, they have a beautiful array of tools that look like something, you know, a surgeon would have, you know. You kind of roll these things out and their research is pretty good and we talk about research but for me...again, I'm guided by research but it's not my be all and end all. It depends on what person is in front of me and what they're like at that particular time and I can only say it makes a difference in the way people can move and the way they feel and it seems to hold quite well.

APM: What's this tool called again?

PC: This one's called a Kinnective.

APM: Kinnective.

PC: There are other tools out there but this is this...there are. I know that —

APM: Other tools are available.

PC: There are but this is my favorite. This has been produced by a chiropractor and it's got a beautiful edge on it and it just feels really good in my hand now. So I use it like this and I, you know...it's easy to flip around and it kind of fits nicely in your fingers and because when you're using it with an emollient, it gets quite slippery because it's stainless steel. When this tool first came out, I got really annoyed by it because one of my skills was to pick out fascial stickiness because I had such great palpation and then this baby came along and just...all you have to do is rub it along at it goes brrrrr and I'm like...so anyway, but I love it. It does work really well.

APM: There will be some people who are resistant to tools like that. Is that a tool you've got to be trained to use? I mean is there a chiropractic course then to teach you how to use the tool?

PC: I don't think you need to have a...in my opinion, there are courses out there that will...it's really hard to answer this one now. There are courses out there that will teach you to use this tool which I went on by the way and it was very cheap and I did it I think with Leicester Tigers and it was, you know...I think the beauty of the course is if you're very skeptical, like I was...I was like, "Yeah, yeah, whatever," and then I went there and I used it, I was like, "Wow," you know. I was really impressed by it and how it felt on my own body that I had to have one and I was very lucky because British Athletics bought it for me. They'll probably want it back now.

APM: Are they expensive?

PC: That one is about £350.

APM: £350.

PC: Yeah.

APM: Good lord.

PC: But there are other tools out there for about £100. So that's when I said there are other tools out there. This one seems to be...it seems to be expensive but for me, I use it a lot and it's particularly good when somebody has had surgery, around scar tissue and around portals. Really good to pick through them.

APM: Jase from Norwich is back on the chat line. First of all, the question he asks here...and I think I know what he means. We all got a vague idea of what viscosity means. What does viscosity mean in the sense that you used earlier on?

PC: So we're talking about...the way I like to talk about thixotropy and viscosity is when something isn't quite right, it does feel like a Tesco's carrier bag. It does have that kind of crispy, crunchy, lack of kind of movement it.

APM: You want it to feel like a Waitrose carrier bag.

PC: I want it to feel like a...yeah, that's a good point. I want it to feel like a piece of cling film with oil on it. That's what I want it to feel like. I want it to be gliding and beautiful and, you know, kind of...and when you start working on somebody, when you're doing fascial techniques particularly, it's very stingy and very burny. It feels like, you know, your big brother's doing a bit of...what they call them?

APM: Chinese burn.

PC: Chinese burns on you.

APM: Other burns are available. No offense to any Chinese viewers.

PC: But that's what it feels like and when the tissue changes, it has...you don't have as much resistance behind your thumbs. So when it's not moving, you can be stuck in a position for a long period of time. You have to wait for the tissue in front of there to go before you glide and then the next journey through that tissue, it does glide beautifully. So you can feel the changes. I think you can but you know, again, that could be...

APM: I'm sure there's a degree of experience that comes into this and I should imagine that...well, in fact, one of our...I think an osteopath, Claire in

Edinburgh has written in, sorry chatted in to say, "Don't worry. We do understand the long words. So it's OK to use them."

PC: That's fair.

APM: And I'm pretty sure that...I mean the tissue palpation skills of most osteopaths, certainly if they've been in practice for a little while will be quite good.

PC: Definitely.

APM: And again, I can't speak for physios and there'll be those in our audience but I'm pretty sure they'll have pretty good palpation skills as well. You're not looking convinced. You could be rude about physios. I can't be rude about physios.

PC: I think it's a mixed bunch. I think the beauty of osteopathy is that it is your 3, 4, 5-year degrees of fully musculoskeletal and physiotherapy's only 1/3 of their whole qualification. The first bit is, you know, you're doing respiratory and you're doing neuro.

APM: Of course, yes.

PC: And then there's only 1/3 in MSK. So usually, it's post-grad and once you're out there in the big, wide world, you're...if you're interested, your hands on techniques will become much better but it's not something that they particularly work on during your degree course.

APM: Jase from Norwich his other point, he's very glad that you said what you did about yoga because...again, no prejudice against yoga particularly but some instructors can go overboard on the whole stretching business. What he has asked here is are you more in favor of strengthening or stretching or is it a literal balance?

PC: I think if it's short, stretch it. I think if it's weak, strengthen it. I think that if it's...for me, stretches should be held for 60 to 90 seconds to at least get a chance of having a fascial involvement. Otherwise, you're missing out...you may as well just hold it and try and do...for long as you can to try and get that fascia to kick in because if it's the hamstrings around the knee, you'll get that involvement of the capsule and the joint fascia and without holding it for that length of time, you're kind of missing a big thing. So yeah, if it's short, stretch it first then strengthen it. Strengthen the tissue that's in the right place.

APM: We've been keeping our model waiting for quite a long time so far, haven't we? Perhaps it's time we got off our backsides and get some proper breathing. Would you like to start first of all with a simple...your simple approach to assessing an SIJ?

PC: Sure.

APM: Putting into perspective what you've said earlier on. Charlie, would you like to come and join us over here?

PC: So maybe what I'll do over here is I'll demonstrate the...obviously the functional SIJ tests or the first couple and then maybe we can go over there and I'll —

APM: And one of our viewers has asked if we can see that tool in action as well because they think it looks like hoof pick and Charlie hasn't revealed if he's got hooves.

PC: It does. It does look like a hoof pick.

APM: Anyway, so I'll leave you to demonstrate on Charlie.

PC: Thank you. So Charlie, if you could just stand here for me, please. The first thing I'd like you to just notice is that Charlie's got his shoes off. The only reason I would leave shoes on during an assessment like this, if they're wearing orthotics because otherwise, you can get a, you know, kind of a false negative. So you want the person to be fairly relaxed and ideally, their shirt will be off, OK. If not, tuck it into the bra strap there. Then you want to be able to expose the PSISs. OK, so the first thing I'm going to look at...so the functional tests we talked about, they were the stork test and also the active straight leg raise but as we're standing here, I'll also show you the flexion test. OK, so the stork test starts with your thumb. If let's say we're doing the right side, so you'd have your right thumb on the PSIS and then you'd have your left thumb on the S2. Now you can use this for two ways. You can either test the side that we're standing on which is the right side and I could get him to lift his left leg and that would show me whether the load transfer was good and you should see no movement at all if the load transfer is good. Then you can also test the movement of this joint and that's by lifting the right leg, OK? So you should —

APM: So when you say the movement, the movement of what compared to what?

PC: Of the SIJ. So what you should see is you should see...in a normal movement, you should see the thumb drop down, OK? To show that the ilium is moving independent of the sacrum, OK? So your thumbs are placed in this position and you also have to assume that your...because, again, you'll get two things here. If the person can't load onto the left leg, they'll wobble all over the place and that's information as well. So Charlie, all I want you to do is lift your right knee just up in line with your belly button nice and slowly. Thank you. So it's quite hard for him to actually do that just without looking at what the SIJ is. He had to really kind of low transfer to be able to do that and come

back down. OK, let's give you...so what you can do...so if I just give you this to just fingertip touch just to give you a little bit of balance and let's see if that changes this. So now lift your right leg again for me. So it's a little bit easier for him to do, OK and we should see this move down, OK which he didn't necessarily do and come back down. Was that clear? Yes? So just repeat that. If you're chesting the right-hand side and the leg is moving, you're looking for movement.

APM: And the SIJ is moving.

PC: Yes, and the SIJ is moving and if you're testing the right side for stability and low transfer, you would move the left leg and there should be no movement of the SIJ. It should be solid, OK? The second thing that you can do here is called the flexion test. There's not great sensitivity and specificity in this test and it also can give you a false positive because you could have a tight hamstring that could pull, you know, your pelvis down. So just down take your feet hip width apart for me please, Charlie. Thank you. OK and all that I want you to do now is I want you to bend forward as far as you go and what you're looking for here is an even distribution of these thumbs and come back up. If one side was really stuck, what you would see is one side would go up, yeah? And then you would take that but you can see why if tissues are tight, that might affect, you know, that reading, OK? The other test, should we go over here on to the...?

APM: Let's do that. Let's move on to the treatment table.

[Audio cut]

PC: As you know, with a straight leg raise, a lot of people will do this for...sort of like a neurodynamic testing but we're not looking at that. We're not going to add in dorsiflexion and we're not going to add in cervical flexion. We're just going to look and see if Charlie can lift his leg up eight inches off the bed. So can you just put your hands by your side for me please, Charlie. Just lift your left leg up and then lower and lift your right leg up and lower. What you're looking for here is does one leg feel heavier than the other. If your patient or client says, "Yes, one leg feels heavier than the other," then there's a few things that you can do to just see if compression is a problem. Is it lacking in compression or does it have too much compression? So if it's lacking in compression, the straight leg raise will be better when I add these movements. If it's got too much compression, the straight leg raise will be worse. Most people with an SIJ problem will say, "My left leg..." They quite often say, "It feels like I'm dragging my leg around." So when you do this test, they say it feels at least 50% heavier than the other side. If you add compression to both ilia, pushing them in together and the straight leg raise is easier. So let's say you lift your left leg —

APM: Your hands look as though they're over the trochanter at the moment —

PC: OK, sorry.

APM: I'm sorry. That was a question, sorry.

PC: No, that's...I would be there for there. Yes, so I'm higher up. They're over the ilia, OK? And I'm pushing in. If the straight leg raise now becomes easier, it's a very good possibility that trans abs is a problem. It's not functioning correctly. It's not giving the compression that it needs. So I'm acting as trans abs. If my hands are over the greater trochanters and I squeeze in and his straight leg raise is easier then we're talking about pelvic floor. So he says, "Oh, yeah, it's much easier," then we'd be looking at pelvic floor exercises. OK? And then equally, if I give...if I do a kind of a distraction, so I'm putting a compression in the back of the...into the SIJs itself and he says, "That's much, much easier," then you're looking at multifidus, OK? So if any of those ones help with the straight leg raise then what's happening is those are the kind of things you would be looking at to add into the program to start strengthening up those issues that when you came back, that test would be different.

APM: And how easy is it to target those specific muscles? I noted that in Leon Chaitow's book on pelvic pain, chronic pelvic pain, he said that...trans abs, you mentioned already. He said that when you rehab them, it's got to be targeted. It's got to be very specific and it's got to be very progressive but how do you ensure that that happens with your patients?

PC: So again, when we're talking about breathing...so you could do some diaphragmatic breathing. Again, that should influence trans abs. You could do the Pilates type dropouts, knee dropout, so bend both knees. You'd have to be able to teach them to engage trans abs first and then they would slowly dropout or move the leg. So again, Pilates type exercises and again, if you're using any kind of...even just a front plank, those things will switch on because it's a global stability in order to keep your body upright. So again, you know, with multifidus, you can use those kind of EMG kind of things, you know, the little bladders that you can put under your back and again, you can do a posterior plank, you know, up on to your elbows. There's a multitude of different kind of exercises you can do to engage him which I'm sure everybody can find on YouTube and things and again, with pelvic floor, it's a case of, you know, drawing up and stopping the flow of urine and again, that can be activated by diaphragmatic breathing as well, so combining a bunch of different things together but for me, it's also...once you get everything else working, if we assume the glutes aren't working correctly, once you start getting those glutes to switch back on and you start getting strength back in there then quite often, some of the other muscles kind of fall into play.

APM: We did have our question earlier on about how do you use this...the hoof pick on your patient here.

PC: So if you pop on to your tummy for me, please, Charlie. So you can obviously use a pillow underneath the tummy but we don't need to in this instance. So for example, you would have an emollient, OK and I would...after I've worked in the tissue...because I always use sort of dry fascial techniques first before I add any kind of lubricant but with this, you would want lubricant because otherwise, you'll get light petechial hemorrhaging while you're, you know...so basically, I would then come down into the SIJ. I would work globally here using this tool. I could put the patient on all fours and do a cat and camel and really kind of get through these tissues first and then using my hoof pick or my picking part, I can get right down and work across the ligaments around the sacral crest and around the spine of the sacrum and start working down through those ligaments and using...I could use the flat edge or I could use the beak edge to do that and it all —

APM: And how long would you spend doing that?

PC: I usually stop when the skin starts to turn slightly pink because again, I don't want to cause any kind of bruising and again, I do fairly global, because I've already done some of the work into this area, I don't have to spend here that...if this was all I was using, I might have to spend a little bit longer here but it's an adjunct. It's just something I add in at the end if I'm not getting the desired results that I want. So I add it in. Particularly, it's fantastic around bones, bony area and joints. So again, here where it's actually...unless you're using dry needling, around here, it's actually really quite nice to get through the multitude of ligaments around the back.

APM: Well, you talk about dry needling in your book quite a bit and obviously, you use that. At what point do you decide to use it? What's the evidence for it? How effective do you find it?

PC: There's beautiful evidence out there, obviously on acupuncture and pain but there's also some great evidence, you know, from Langevin when they're using the fascial winding and, you know, Gunn has done some stuff where it kind of is almost like piston needling. So I find I use it when there's...either somebody's really quite uncomfortable and so hands on techniques are too sore, so I can use them...obviously, I can't use them if somebody's scared, if they refuse to have them. So then we work around that because I would never talk somebody into doing that but equally, if something's incredibly stubborn. So if you've got something that you're working on and you're just feeling like you're literally flogging a dead horse or you're going to put trauma into that tissue because you're working...you got to kind of move away at some stage. Sometimes popping a needle in.

APM: And are you working very specifically with your needles or are you working globally with —

PC: No, no, it's dry needling. It's not acupuncture. It is...sorry.

APM: No but you are using trigger points remote from the site of pain.

PC: Yes. So yes, it's where the pain is. So I might stick needles in the QL. It might be around erector spinae. It might be right around the joint. It's likely to be glute med, glute max kind of area and sometimes into adductors to try and just get that freedom of movement. So yeah, it's very specific. If I'm working on these tissues and I'm finding that I can feel areas and then it's just getting irritated, I just don't want to spend too much time on there. I'll pop a needle in.

APM: This is a question, which I think is really asking you to explain the straight leg test that you did a moment ago.

PC: Sure.

APM: Which we kind of distinguished between the straight leg raise test and the active straight leg raising test which you did because the question is how can you do an accurate straight leg raise if you're using both hands to push inwards either side of the pelvis? As this viewer understands it, the operator should be taking the weight of the leg as an SLR as opposed to an active SLR, which is what you've been —

PC: Yes, active.

APM: Could you just explain the difference between two tests for us?

PC: Sure. Can you pop on to your back for me, please? So a straight leg raise test, which also has one of the best sensitivity and specificity for neurological, is very passive, OK? So I'm doing the work, OK? So your leg is completely relaxed. I'm taking the leg up into a position of when you feel a bind. I'll get the patient...I can pull the toe up and then I can just get you to lift your head up. You got no problems on your back, have you, before we do this?

CHARLIE: No, I'm fine.

PC: And then we would be looking for a pain distribution down the leg. So this is a passive activity. The reason the other one is active is because we want to see how the load is transferred in supine. So in this position, it's kind of like getting them to stand and lift their leg, you know. Is there load transfer or are they all over the place? Is it very, very hard? This is just another way of looking at load transfer but they still have to do it themselves. Does that answer the question?

APM: I think it has, yes and we'll certainly make that clear in the text summary, the difference between those two tests. An observation from one of our viewers

here about your little tool there. Apparently, this person has a fab tool called the Fascial-Edge supplied by a chiro called Andrew Glaister.

PC: I've heard of Fascial-Edge, yeah.

APM: And he's been using it on horses for eight years.

PC: Fabulous.

APM: And in clinic and apparently, it saves their fingers a little work.

PC: Yeah, it does. I mean it —

APM: The hoof pick does come in handy.

PC: Yeah. I've been doing this forever and a day and I don't get any hand pain or hand discomfort and I use my hands all the time. For me, this isn't my be all and end all but it does have a place and, you know, I say to you before, I kind of like was like, "Oh, something that does what I used to do," but it does have quite a significant impact on some structures and it's, like I said, particularly around joints where you can just suddenly get freedom into...yeah, it's just very, very nice.

APM: We talked about, again, this a little bit earlier on and I'm wondering if we can actually do this on the treatment table where the cameras can see it properly. Could you talk us through the process of getting a non-athlete patient, let's say an ordinary person, into the plank position? How would you get into that given that they've probably got a painful SI?

PC: Yeah, OK.

APM: And then how do you assess whether it's a good plank, a bad plank or whatever else given that they're not athletes, they can't hold it for three minutes?

PC: I'm not looking for them to hold it. Thirty seconds is good for me. OK, so if you just pop on to your...can you do a plank first?

CHARLIE: I believe so.

PC: So that's the first thing I would ask and if they couldn't get into an all fours position, that's how I would start. So can you just get into all fours, please?

CHARLIE: Facing this way?

PC: Doesn't matter which way you go. And again, you'd have to have a nice couch that isn't wobbly or you'd have...quite often, I take them out onto a

mat in the gym and just use that way. So in this position here, you'd want to know whether they could hold that position and if they were quite comfortable in this position then you'd ask them to take their knees a little bit further away because...yeah and then just try a plank like that. So keeping your bottom nice and straight, just go...can you drop down onto your elbows for me? Because it's a little bit easier to hold that and drop that bottom a little bit if you can.

APM: So we're looking for a straight line along from the thighs and the upper back.

PC: It needs to be completely straight, yeah. So drop that down a little bit more. Lovely. OK and is there any pain there? If not, can we go up onto your feet? Lovely. So he's really good at that, OK? Head needs to be in complete neutral. Elbows, ideally want to be directly under your shoulder. Otherwise, it's quite hard to hold. Yeah, it's quite hard to hold and you're actually gripping to hold yourself into position and you need to be in a perfect straight line in that position there and if they can't hold it for a period of time then you would just build it up, five seconds.

APM: So the period of time is irrelevant. You're just going to increase the amount of time they can do that.

PC: Yes, it's irrelevant.

APM: And this is something you could send them away to do at home.

PC: Yes.

APM: Would you mainly do this in front of a mirror so that they can check that they're holding the position correctly or...?

PC: Yes. Usually, they...quite often what it is, I'm demonstrating...I'll demonstrate it. I use a program called Rehab My Patient and on there are videos, shows you exactly how to get into position, so it's not just a picture. So I use that program regularly and obviously, I demonstrate it. They try it and try it and they'll quite often go, "Can you just check me again?" And it's usually where the bottom is the problem.

APM: A question from my technical team. Can we do another demonstration? We've got a camera that can observe the thigh thrust technique. We've got a wire problem on a camera? No? Right. I've been asked if you could demonstrate the thigh thrust technique.

PC: Sure, pop on to your back for me

APM: Sorry, I didn't want to do this if we can't get this on broadcast.

PC: No, it's fine. Can I just this tool? You hold that for me, please.

CHARLIE: It's a weapon.

PC: It's a weapon. Lie down for me please. So —

APM: Only weapon you can legally carry in public without getting arrested.

PC: So I work on a bed a lot lower than this because I like to be able to...just bend your knee for me please. OK, this doesn't hurt unless it's painful. So basically, what you're doing here...I might have to climb on. It's a bit high. I'll fundamentally try it. So basically what you're doing here is you're going to get the femur directly above the acetabulum and then all you're doing is you're pushing down with a force. That's all it is. It's a thrust and it's a quick one because you don't want to be holding the position for too long if it's painful and it should just...yes, I can feel that. That's painful, like, you know, straight away, you look at...you're always looking at their face. Look and see what their reaction is.

APM: So on its own, that's not in itself diagnostic but—

PC: No.

APM: --it's one of the four tests. So your first one was distraction?

PC: So yeah, thigh thrust is...they've got the highest sensitivity and then distraction is...got the highest specificity, OK? So distraction again, one hand on each ilia. You can cross your hands over or you can do it this way, whatever you like and again, all you're doing now is not...you don't want to be holding it too long but what you want to do now is push the ilia out towards each other at the back, OK? So you're basically pinching the SIJ. So you're pushing away from the midline and then that would cause pain.

APM: And we're looking for pain in the same site as —

PC: Pain, yes.

APM: Compression is the opposite, presumably or would you do your compression side lying?

PC: I do compression side lying. So you can do it like this if you're really, really strong but I like to...if you side lying for me, please, because this way, you're getting the best of both worlds. You're already compressing on this side. Bend both knees for me, please. OK, climb up on the plinth and again, put your hand on top of the ilia and just push down but don't...and again. So this time, you're gapping the SIJ and you'll get pain.

APM: Four tests, so we've got —

PC: And then the last one is the sacral thrust. Sorry, pop on to your tummy. So the first two are imperative. You do those first then if you still got a negative or if you have a positive...like they say, they like to do a cluster of three. Heel of your hand straight down onto the sacrum, straight into the middle and a thrust, OK? Looks a bit like a cavitation but actually, what it is, again, you're just —

APM: Are we talking high velocity thrust or a nice gentle thrust like you've just demonstrated there?

PC: Yeah, it's a gentle thrust because you're not going to —

APM: Load it slowly.

PC: The idea is not to manip. The idea is to just drop in and see if there's any pain, OK?

APM: And Jase from Norwich is hogging the airways.

PC: Jase, you're back. Hi.

APM: Can we see a reverse plank, please?

PC: Reverse plank, yes, go on to your back. Do you know what a reverse plank is, elbows behind you?

CHARLIE: I don't, no.

PC: So bring your elbows behind you in this position. Put your legs out straight, heels on the ground. Lift your midline up, reverse plank.

APM: Now....

PC: Keep it straight, just...that's it. Head in neutral

APM: What are we getting from this one? What's it doing for our patient?

PC: Well, there's two ways of looking at this. Just relax now for me.

APM: You can relax now.

PC: Thank you. This is actually one of the Bunkie tests. So this is a posterior power line. This is exactly the position you get into and what you're looking at here is those structures in that superficial back line, so all of the erector spinae down into the glute, into hamstrings, calves, they're all active in this

position. So you're looking for how long somebody can hold it again. Are they stable? Are they wobbling all over the place? Is it possible for them to do it? Are they feeling any pain doing it?

APM: While we're at the treatment table, is there anything more that you think you want to demonstrate to us before we —

PC: Yeah, I think we can come back if we need to.

APM: Let's go sit down because my diaphragm's getting tired now.

PC: Sure. Thank you, Charlie.

CHARLIE: No problem.

APM: Good, thank you for that. I wanted to go through some of the other adjunctive therapies that can go on with this. You talked about prolotherapy and injections earlier on. Now at what stage do they come in to our diagnostic or therapeutic process? Are they a good diagnostic tool, for a start, for sacroiliac pain?

PC: I think the ones that seem to be good doing...is somebody that's just using local anesthetic, to see if the local anesthetic deals with the problem and if it does then it's worth pursuing to see if there's anything else, whether that be a steroid, whether that's prolotherapy, whatever the doctor...it's not my field. I don't do injections. So, you know, I can't necessarily go into great detail about this but from my experience, that tends to be what happens. They'll do a kind of, like you said, diagnostic local anesthetic trial and if that's effective then they will go through doing prolotherapy.

APM: And there's been a lot of controversy about injections of this nature, hasn't there? Because unless they're radiologically guided or ultrasound guided then there's a huge possibility of them giving false results.

PC: Yeah.

APM: And how many places can you expect we'll be able to do with that quality of injection? GPs generally —

PC: No. In my experience, it's done by a sports doctor and it's under guided ultrasound. It always has been. They are very, very specific and so yeah, if your GP offers to do it, I'm not sure I would be 100% behind that, you know. I would be...unless they've got a specific diagnostic center.

APM: And whatever results you get from that could easily be wrong because if it's not guided, you don't know that your anesthetic or your anti-inflammatory's gone into the right place.

PC: Again, you would hope that the subjective information that you're getting, what the person feels, how they feel it when they feel it, combined with the tests that you do, combined with the treatment that you do, it's very, very rare that I have to refer somebody to go and get prolotherapy because you would hope, in most cases that you're dealing with...and you're dealing with dysfunction and lack of movement and, you know, shortness and weakness and inhibition, once you've dealt with those things, you know, 9 times out of 10, 9 ½ times out of 10, they're better.

APM: We haven't actually discussed what prolotherapy is as opposed to anesthetic or steroid injection.

PC: Right. So it's a sclerosing agent. So they inject the sclerosing agent that kind of thickens the tendons and the ligaments around the joint to stop movement. It's almost like a type of fusion in a way but injection guided. You know, in my experience, it's happened with people that have particularly loose SIJs. They could be hypermobile. Again, they could have pelvic inflammatory problems. It could be post...having a baby and all of these kind of problems. And so the ligaments are just not responding to additional load and proprioception, which theoretically should kind of start to offer more support. So they put a sclerosing agent in.

APM: Has it got a good track record?

PC: It's got a variable track record, I think I would say. I think that there's some people that are responding incredibly well to it and other people that don't.

APM: Where is it done though? It's not common, is it?

PC: It's pretty common in my experience. Yeah. I know quite a few people who've had it done and I know people that have come to me after they've had it done. Yeah, I've only had one personal experience where I've sent somebody through a sports doctor to discuss the possibility of that and that was a hypermobile person.

APM: It's interesting because I was under the impression that prolotherapy had actually fallen out of favor in the medical community for a long period of time. It's kind of resurfaced again.

PC: Well, maybe they're using it in different ways. I mean again, the research changes, doesn't it? It's up and down. Somebody will say, you know...because there's been, you know...a lot of people using traumeel and PRP and, you know, it's like...it goes through flavors I think.

APM: I'm not going to tell you who asked this question.

PC: Jase!

APM: How would you teach diaphragmatic breathing?

PC: That's a really good question. I'd always start with them on their back because that's the easiest way to get it to go. It's quite hard to do it sitting up and it's quite hard to do it standing. So once they've nailed it on their back then they can kind of practice it. So I always get them to put one hand on their chest and one hand just below their ribs. I always say...first time, I just say, "Try and take a deep breath without moving your chest." Really hard for people to do. Then I say, "Try and take a deep breath sticking your stomach out," because that's not ideally what you want but that's kind of what you're trying to say to them. So I say, "Take a deep breath and stick your stomach out," and then after a couple of times, they kind of go, "Oh, I get it now." So once they've gotten used to the movement that should be happening down here by just pushing their tummy out, they can actually breathe into that space. So that's how I normally get them to do it.

APM: And you're going to give them exercises to make sure they're doing that at home, you know, same thing, hand on stomach, hand on chest?

PC: Yes.

APM: Or you're just going to trust them, having done a couple in the clinic to go away and do it properly —

PC: No, I tend to...again, you know, I look at psoas activation and you can tell when somebody's doing it, usually and if they're doing it right because it does change the strength of the psoas quite quickly and usually, once they've seen that, they've bought in and they're doing it and they go, "I was doing the breathing. It makes me feel fab." And it is about...with a patient, they have to see results. They have to see what the benefit of them doing it is. People are notoriously bad at following, "Let's go do these exercises," or, "Here's your exercise sheet. Let's go do it." They're notoriously bad at that but if you show them something's changed, all of a sudden, you can have...you've got buy in. They're like, "I can't believe the difference." And so then I don't really have trouble getting people to do that. I don't generally have problems.

APM: You're actually backing up an awful lot of what Leon Chaitow said. I'm sure he'd be really pleased to hear that —

PC: Well, good.

APM: But he also talked...and it's worth looking back at that recording, if you have the time, because he talked about pursed lip breathing as part of a training technique to avoid over breathing, all of which will affect the muscles that we've been talking about and so on already. I wanted to ask you about

taping. Now in your book, you talk about Dynamic taping. Is that the same as K taping?

PC: No. Dynamic taping is the bomb. It is —

APM: It's the what?

PC: It's the bomb. It's a fantastic tape. I love it. It's the only tape I use. I've used every other tape on the market and nothing comes close to it. It can stretch width ways, diagonally, length ways. It —

APM: That's what K tape does, isn't it?

PC: No and usually it only goes length ways. It doesn't have all of the...it kind of acts like fascia. The difference between K tape, Kinesio tape and Dynamic tape is that Dynamic tape is...it's trying to affect the eccentric load on the musculotendinous unit. So what it does is it slows down that eccentric load. So you put it on in a shortened position. Most K tapes are put on in lengthened position. So you put it on in a shortened position and you can make it...you can do a powerband or you can use the black...they've got this new ecoband, which is super thick. Fantastic around Achilles and things like that. So basically put it on a shortened position, you smooth it down and you put it on but you have to have a really long anchor because you can imagine, if you're trying to control eccentric loads, it could actually pull on the skin and you could actually have blistering. So it's really, really important that the long...very long anchor and then what it does is it controls the eccentric load and then what it does is it puts an elastic recoil back into the muscles. So it kind of protects it but kind of enables the muscle, if you like, so you're able to continue training, continue competing, you know, assuming it's not an injury.

APM: Do you run courses on this?

PC: Yes, I do but I tend to put it all in one again. So if I'm doing a course on the SIJ, it's something that we do on the SIJ...I don't just do it as an individual course. However, Dynamic tape do them and they're very, very reasonable.

APM: I have to say, I mean we've had a speaker in to talk about K tape and the other varieties of that in the past and I'm less convinced by the theory behind that than I am by what you've just described about Dynamic tape and I'm not saying for a second that K tape doesn't work.

PC: No.

APM: It may just be that I don't completely understand why it doesn't work or, you know, the mechanism isn't quite well explained to me. Is it good for tennis elbow, Dynamic tapes? It's Tim from Hereford.

PC: Yes. So you would tape the arm in this position and this position. So again, the shortened position because obviously, you're talking about your lateral, you know...your lateral epicondylalgia. So you want to go into the hand, across the arm, OK and then you also want to come down from the forearm. So you're basically reducing that eccentric load and that eccentric load. And then you can do a very —

APM: Is this unloading the tissue or is it helping to rehab those tissues as well?

PC: It's both. It's unloading but it's helping the eccentric load. It's reducing the eccentric load, which is where a lot of that kind of things happen, but it's quite hard to tape...well, I guess if you're left-handed. It's quite hard to tape yourself certainly when you're doing your hand or your arm or anywhere else but it's real easy to your...I've taped myself with Achilles and plantar fascia and it's had amazing results. So yeah, I don't sell this tape. I've got no financial...but I love it. It's brilliant.

APM: We have just a couple of minutes left. I said earlier on you have an effect on our audience. You've certainly had an effect on Jase from Norwich because he wants you back in —

PC: Jase, hi.

APM: He wants you to come back and do some more.

PC: Come back.

APM: Because this is going down very well with the audience. There was a question about how you test psoas, which I think we're going to have to leave...well, unless you can do it very quickly.

PC: I can describe it.

APM: Go on.

PC: Yes, I can describe it, if you like. I can show you it; it's up to you.

APM: We haven't time to do that now I'm afraid.

PC: So very quick description, person's lying in supine, leg is extended. Take it up into about 40°, 50° of flexion with the legs straight. Laterally rotate the leg and get the person to hold that position and then say, "Don't let me push your leg down. You push your leg down," and usually it goes like that. Then you get them to do a few diaphragmatic breaths and all of a sudden, the strength is there and they're like, "What?" So it's a really nice test. Obviously, the other one would be standing and you'd have to go above 90° to get to psoas. Otherwise, you'd be influencing the Rec Fem

APM: And my final question is about sacroiliac belts. We haven't talked about piriformis, have we?

PC: No but that's OK. It's —

APM: Jase wants you back in.

PC: Come back.

APM: Are they good? Are they worth having?

PC: I only use one and that's the Serola. I think they're very, very good if you need one. I have one because I have SIJ problems myself and it can get me through a day, you know, and the good thing about an SIJ belt for me, personally, is that it doesn't...it's not like wearing a corset where everything just goes weak. What it is a massive proprioceptive afferent input and it kind of wakes things up for me. So I can wear it in the morning and then I can take it off and I'm fine.

APM: We haven't had time to cover some of the other research about those but I do remember reading that with the sacroiliac belt, you'd have to go both the trochanters and the force required to make it effective was about 50 Newtons, which is described as being the same force you use to tie your shoelaces. So it's not huge force, is it?

PC: No.

APM: It's just a little bit of stabilizing compression on the joint.

PC: Yeah, exactly that and it does feel like it's squeezing you and you can use Dynamic tape to do that as well but the SIJ belt itself is really, really quite nice.

APM: A question about what taping would you use for the SIJ. I'm assuming you use Dynamic tape, as you've just said, in a, the same sort of manor

PC: Yeah. So you can go around the thing and then kind of like...you can go all the way around across the joint and go down and also, it's very, very nice to take the oblique line, going from your lats down into your glutes as well to kind of give that wake up —

APM: Paula, I'm hurrying you now. I can see the clock. You run your own courses in all the stuff we've been talking about this evening. There's a lot that goes beyond basic training there and you run master classes for experienced physiotherapists. We're not talking about newbies here, are we? Where do you run the courses?

PC: Most of the time, they're in Birmingham because that's closest to me and, you know, there's a nice place there but you can find all that information on the website.

APM: And we will put a link to your website up very shortly. The book that we've been referring to is this one which there'll be link to as well on the website which is Sacroiliac Dysfunction and Piriformis Syndrome.