Academy of PHYSICAL MEDICINE

Muscle Inhibition - a Missing Link

with Simon King

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TRANSCRIPT

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Steven Bruce
This is gonna be interesting one, I'm joined by Simon King. Now Simon was a chiropractor for 10, 11, 12 years before returning to his native Australia when he came off the register. And since having returned to the UK, he is no longer on the chiropractic register. So, we're not allowed, I'm not allowed to call him a chiropractor, I have to call him instead an Afferent Input practitioner. Simon, it's great to have you with us. I'm fascinated by what an Afferent Input practitioner does.

Simon King
Yes. Thank you for that. Well, I graduated in 86, actually, so I was practicing as a chiropractor long before registration was ever invented, of course. Yes. So, 34 years in the field.

Steven Bruce
I wonder and we might get some questions later to ask about why you chose not to go back on the register or go on the register when you came back to this country. So anyway, tell us about Afferent Input.

Simon King
Before we get started of course with it this new thing that we're all dealing with, we have to make sure we're socially distanced, and make sure everybody's safe. So, I think you're alright. And of course, I brought my PPE here and I have to wear PPE these days. So, I have all my face masks ready.

Steven Bruce
I haven't got a face mask, but my microphone is underneath my shirt. So, it's hopefully it's protected too and I won't pass any bugs on to you.

Simon King
I know I definitely need protection from the government, that's what I need protection from.

Steven Bruce
Why is that?

Simon King
Well, the virus is no problem at all. But governments can ruin your life so I have no fear of the virus. I just fear government.

Steven Bruce
Which I guess is why you decided not to go onto or go back onto the register when you came back to UK a long time

Simon King

Been longtime into the philosophy and practice of libertarianism. And yes, I don't like rulers and extortionists.

Steven Bruce
Right? Okay. We better just clear some of that before one of us gets locked up,

Simon King
Probably. Anyway, what did you want to talk about?

Steven Bruce
Well, I thought we might talk about common inhibitors of muscle tone, since that's what was written on the screen behind me. But what made you call yourself an Afferent Input practitioner?

Simon King
So, I struggled for a long time. So, I've been testing muscles since I started so 34 years on every patient every visit, and I got to the top of the tree in applied kinesiology where I was teaching applied kinesiology. But I ran into problems with that type of muscle testing. Basically, they were teaching techniques instead of principles. And even at the teacher level, I wasn't able to make sense of it in a generic sense. So, it didn't seem to be any principles that I could grab hold of and say, right, that is true. So, I went back to the books about in the year 2000, I went back to the books and I studied muscle neurology again. And I learned about Sherrington and all these reflexes. And I came back to these reflexes that control muscle tone and movement that had been published since 1906. But very few people understand, very few people seem to be able to apply clinically. And with that knowledge, I sort of invented a whole system of muscle testing and treatment, that I originally titled Proprioceptive Medicine. And then I changed the branding to Afferent Input. And so maybe we could talk about what that is.

Steven Bruce
Yeah, I think that's a good idea because I think possibly proprioception rings loud bells with osteopaths and chiropractors. Afferent Input sounds a little bit more mysterious. Maybe that's just me.

Simon King
Well, one of the problems with proprioceptive medicine is that people have an idea about what proprioception is. And as you know, they will know that proprioception is a sense of a body position sense. So they get the idea that proprioception gives us where our body is in space. But in my view, that's a very limited view of proprioception. And the only reason we need to know where our body is in space is to control our muscle tone. And therefore, it is a lot more to do with strength, power and movement than it is to do with body position sense. And the other thing with chiropractors, they didn't like the medicine term in proprioceptive medicine so I changed it to Afferent Input. So, everybody in physical medicine, who touches a patient or does anything physical with a patient is practicing afferent input. So that's why I thought that term might have a wider appeal, because you're changing the input into the nervous system. And hopefully it's understandable how that changes the outputs.

Steven Bruce
Okay. I'm just gonna address a question that's come in already. Elspeth has asked, can we have the reference for this, please? I'm not sure we actually said anything that needs referencing just yet. But later on in your slides, I know you've got a number of references for the things that you say. And I suspect that she is just seeking justification for your theories, which of course, in all our branches of medicine may be easier said than done.

Simon King
So, there are two branches of medicine, really, there's the physical medicine, there is the branch of physical medicine of matter. And then there is the other branch of clinical medicine, which is statistical. And I tend towards the physical medicine and the biologic medicine, and that's where you get Sherrington's work. So, everything that I'm going to talk about tonight is valid for every vertebrate universally, so, wherever you go and pick up any sort of vertebrate with movement, all of these principles can apply.

Steven Bruce
When you say that the other branch of medicine is statistically, you simply mean that conventional medicine relies on research statistics to justify its processes and procedures?

Simon King
So yes, if you look at any randomised control trial, it's a statistical analysis of averages based on probabilities and regards every subject in that equivalently. So, there is no individualism in that approach. And of course, the reason we randomise is to hopefully separate all of the confounding factors equally between the groups. But that may or may not be true and we certainly can't control for the factors that we don't understand.

Steven Bruce
Yeah, and generally to weed out those confounding factors, you need huge numbers in the study group, which is always difficult for anyone short of the money that the pharmaceuticals can throw at it.

Simon King
The larger the sample, of course, the less relevant it is to everyone, any individual. So, you have the control group with and some of them get better, some get worse and the treatment group some of them get better and some get worse. And so, when the next patient walks into you, it's purely a matter of luck or statistics as to whether they're going to get better or worse and which is the right treatment to give them. And to me that doesn't, that's not what we do as clinicians, in my view what we do as clinicians is we have an idea or model in our head of what is normal or optimal. And so, everybody that comes into us, we're really seeing how they're deviating from that normal and hopefully trying to restore it. And the trick to how successful we are in our practice is how good is that model? Alright, and I hope the afferent input is a model that people are going to enjoy as most of my students do enjoy the model.

Steven Bruce
Good. So, Elspeth has clarified what she was looking for, she was looking for the author of the book, that you mentioned earlier on.

Simon King
Oh, it's Charles Sherrington. He wrote The Integrated Something of a Nervous System, something like that. Anyway, he published in 1906, the sort of the textbook, he did some amazing work on reflexes, which is the basis of how we move.

Steven Bruce
Okay, so where does that take us then with your work?

Simon King
So, what it takes us into is looking at muscles and you know, muscles is a very neglected part of medicine. There's specialties for every other body system, but there are no myologists and that's a shame because muscles is the basis of all movement and protection from injury. And so, if we can understand how, and yet we all deal with muscles, you know, we give exercises and we give stretches and we give massage and trigger point therapy and we're doing acupuncture needles and we're doing adjustments and we're all trying to influence those muscles. But without really understanding the physiology and how to change them permanently, because and we get postural advice and hopefully we're trying to influence muscles, with, my view, fairly limited success.

Steven Bruce
Okay, surely in our colleges, we are taught the physiology of muscle contraction and then we get some training in how we can stretch those muscles although I would say that the evidence for the long-term effect of stretching is pretty ropey.

Simon King
Stretching is an interesting thing, isn't it? Because if you're stretching, what are you actually doing? And then when we get into the first of the topics tonight, really, which is the myotatic reflex, which is the knee jerk reflex. And that says that when you stretch a muscle, which is what the attack with the hammer is doing, then that sends an impulse back into the spinal cord and then an efferent out from the motor neuron, which is going to make the leg fly out. So, the more you stretch the muscle, the more it contracts against you. So that's why stretching is going to have a fairly limited effect. And the more you put that muscle then into contraction, the more you're inhibiting its antagonist through the law of reciprocal inhibition, and then you've got some temporary inhibition, which is fine. So that's a chart, you brought up there. And this really is the chart that changed my life. Once I understood this, it made things a lot easier to understand. That first panel on the left, there is a resting state. So, it's a muscle in a resting state. And if you look down to the third line, you'll see incoming nerve signals. So, these are signals that are being generated by the muscle spindle cell. And you'll see the generated all of the time they are a constant input. Now, when the weight is applied in the middle panel, that weight then stretches that muscle. And in the bottom line, you'll see a corresponding output from the motor neuron, which then has to catch up because of the massive input from the muscle spindle then catches up by contracting in the middle panel as the weight is applied. And if that weight is kept constant, both of

those fatigue slightly, but their output is still higher than it was at resting. And so, this is very important to understand that even resting muscle tone involves 50 cycles per second output from a motor neuron. So, muscle neurons are contracting at rest 50 times a second, when you're at full contraction, the motor neuron is outputting at 500 times a second. So, there is this massive immediate control over all of your muscles. And this is far greater than could be controlled by brain activity, and therefore has to be controlled by this moyotatic reflex.

Steven Bruce
I'm slightly struggling with that because when you when you wallop patellar tendon, you get a sudden contraction of the muscle in response to a sudden stimulus. I'm not sure I notice that same response if I were doing soft tissue stretching of the muscle manually, and you do at the end of the session, and for a brief time thereafter, see a lengthening in that muscle. If you measure that by the range of motion of the joints or whatever. And yet, you're saying that if you stretch a muscle it's going to contract against you.

Simon King
Well, in this example it does. And in every other example, let's say you bend forward, you're stretching your spinal extensors, and they are going into an eccentric contraction. And the key is here that they're still contracting. So yes, they're stretching in response to the flexors or an eccentric contraction of extensors, but they're still under contraction. And you can't lose that. If you could turn that off, then you could massage somebody and they wouldn't be able to walk anymore. But you're not. You might be inhibiting a muscle slightly. But that's a fairly temporary effect, the effects on the proprioceptors. proprioceptors can't be that subject to manipulation, they are subject only to immediate change. That's how we can move so rapidly, and that's why gymnasts can do somersaults because muscle spindles have to turn muscles on and off constantly during the day.

Steven Bruce
Those spinal extensors are under eccentric contraction in order to keep the body in the position that it wants to be in. If they switched off, as you said, you'd fall forwards. But when you are treating a patient on a table, and they don't need to maintain, let's say their knee flexion and you, in theory stretch that quadriceps you will see greater range of motion of the knee, and that doesn't go away, they don't forcibly contract against you. So, what you would get if you worked on the spinal, the theory is surely if you work on the spinal extensors, and you stretch them, it enables them to go further, doesn't stop them doing eccentric contractions to maintain stability.

Simon King
Yes, and they may stretch. My view would be your better contracting the flexors in order to use a lot of typical inhibition to inhibit the extensors. So, I'm not saying that you can't stretch and get more mobility. I'm just wondering how lasting an affect that is.

Steven Bruce
I think the research that I've been made aware of is that you might get an immediate effect in treatment, it might last for a couple of hours afterwards. But that lengthening of the muscle diminishes very rapidly

and effectively is nonexistent after a day or so unless you continue to do whatever the stretching mechanism is, whether it's manual therapy or self-stretching.

Simon King
So that's my take on that. So, every muscle, every motor neuron is outputting, at least 50 times a second, and where does it get that stimulation from? And so, one of the things we're going to look at then was a motor neuron. Have you got that slide there? So, this is the muscle itself. And this is just showing that the muscle spindles will increase their output with any sort of Attention whether it's active or passive, and it just shows the constant output. Alright, it really just shows that the output from the muscle spindle and therefore the output from the motor neuron will be increased under active or passive contraction. Okay, and this is the motor neuron. So, the next one was the motor neuron which you just flashed up there. So, motor neurons are really interesting. So, there they have one axon, which is providing a signal purely to a muscle fibre, and they receive 10,000 inputs. Now, each of those inputs can only provide half to one millivolt of stimulation, and some of those inputs are facilitatory and others are inhibitory. And when those facilitatory and inhibitory inputs add up to about 70 millivolts for motor neuron will fire and send an impulse to the muscle fibre getting to contract, and like we already said, that's happening 50 times a second at rest, and up to 500 times a second for contraction. So those 10,000 inputs are what's providing the output for those muscles. And what we need to really understand is where all those inputs are coming from.

Steven Bruce
Right, and this is probably a relevant question that's coming from Selma. She's asking what exactly is muscle inhibition, and it may be that you're going to cover that we'll get we'll get to that

Simon King
in just a minute yet.

Simon King
So, really a muscle inhibition, let's say the motor neuron needs to provide 400 cycles per second to get the muscle to contract fully. But because of the inhibitory neurons that are coming to it, the inhibitory inputs, it can only provide 300 and therefore what you're getting is an inhibited muscle, which is unable to contract as strongly as it would under normal circumstances.

Steven Bruce
So, you're now showing us the withdrawal reflex.

Simon King
So, this is the withdrawal reflex. And so, the withdrawal reflex is one of the clearest indicators of muscle inhibition and we all sort of know the withdrawal reflex. So, the withdrawal reflex is this is the classic version of it, you stand on a tack. And what you get is facilitation of the flexors so the hamstrings and gas trucks and the knee flexors and lift your foot off the nail. And because of the law of reciprocal inhibition, you must get inhibition of the quadriceps and the extensors. So, on that side and you get the

opposite on the other side. So, this is the classic withdrawal reflex that we all know about and it's the withdrawal reflex and we also get it in the hand when you touch a hot iron or burn yourself on the stove. And so, we understand it and we sort of dismiss it as a pain related reflex. But it is really much more than that. And we use it all the time. So, it's also involved with any of our skin receptors. So, let's say tickling is withdrawal reflex even though it's not painful. Tickling is a withdrawal reflex that you know you contract away from irritation, and even a non-painful stimulus like a pebble, if it was lodged in your shoe, you would tend not to leave it there we don't like irritation to our body. So rather than walk with the pebble in your shoe, you will live virtually always stop and take it out unless circumstances and emergencies dictate that you need to live it in but leave it in but generally, we will not easily tolerate irritation to our sensory input.

Steven Bruce
So far, this is all standard stuff we know this, we're building up to something a bit more revealing, I sense.

Simon King
Well, you will. And the interesting thing about this is that when you look at medicine and where it's most successful, most medicine is most successful in the emergency room, where it's easy to see the damage that you're doing to the body. So, if you go into the emergency room with a nail on your foot, there is only one proper treatment for that, you wouldn't like to have acupuncture or drugs or acupuncture or a massage or aromatherapy for that, you really want somebody to take the nail out, and that's what they will do. So, we take the nail out of our foot. The trouble is so many of us have other irritations like a nail. For instance, we have earrings or piercing's and so one of my early observations of this work when I figured out and start to wonder what could mess up output from a muscle. Well, it can to bad inputs. And so, I wondered if they were bad inputs that could affect people. And so, I wonder if you'd like to show a couple of those examples.

Steven Bruce
Yeah, I would, then the videos you sent me were numbered in a different order than the ones in your slides.

Simon King
I think you can go with the order that I gave them to you. So, this first one was 2000. This was my number one patient. This was the first time I had my theory. And I thought we'll just test it and I had no idea what this would bring. But this woman was in severe trouble. If you didn't know you would have said she's got MS. 18 years of ill health, spinal exploratory surgery. They sewed her up, couldn't do anything. She couldn't hardly walk. You'll see the effect that had on. And I decided if this theme was right, I had to be able to fix that.

Steven Bruce
Okay, let's have a look at her.

video plays in background

Steven Bruce
She seemed quite pleased at the end there.

Simon King
She was a little bit yeah.

Steven Bruce
That was 2000?

Simon King
Yes. And my theory was starting to take shape. And in the last 20 years then I've been trying to constantly disprove the theory and haven't managed to do it yet so it's still holding.

Steven Bruce
So explain the theory, what is it you are managing to affect and why does she not still have to play the piano with a finger in the mouth?

Simon King
So, you'll see some more in a minute. We won't go too much into the dentistry because it freaks people out. But turns out the foreign bodies in the body are an irritation and they provoke the withdrawal reflex. And it turns out your teeth, have a sensor in the periodontal ligament, have loads of sensors in the periodontal ligament that at the same type sensors as around the muscle spindles in that they are constantly providing an input and that is how you have so much control over your bite muscles. So, as you bite on something, the facilitatory reflexes, activate your bite muscles so you can bite through a marshmallow or an apple or a walnut. And if you happen to hit something hard or bite something hard, those same sensors then switch off your muscles so you don't break teeth. So, the teeth are intimately related to your motor system, especially the mouth, you remember the last time you hit something on your tooth, you didn't just inhibit your masseter, you switched off your whole body. And there is this effect, if it's bad enough of foreign bodies in the teeth acting like a tack in the foot, and so it changes muscle tone, and that's the key to it. So, and it turns out, I had no idea at that stage that crowns would be a problem. But these are metal crowns that contact the very sensitive gum tissues and the irritation that provides although there's no pain involved, irritates the nervous system and can cause permanent muscle inhibition until the crowns are removed.

Steven Bruce
But of course, there are many people wearing crowns who don't appear to have those problems.

Simon King
Yes. But how do you know they don't have problems? And so many people, you know, think that they're okay. And are they really? How do you know that they don't have muscle inhibition? Because muscle inhibition isn't painful. You don't know that a muscle is inhibited. If you contract your biceps and your triceps is inhibited, it doesn't feel any different. So, you don't know that you have muscle inhibition. The

only thing happens is if you need that muscle and it doesn't activate like it should then you get a joint injury. And then you get low back pain and osteoarthritis and artificial hips and knees and all sorts of problems just from dentistry.

Steven Bruce
Well, I guess I'm inferring from no stats, no data whatsoever. There are lots of people in the gym doing leg raises and other exercises who don't have those ticks and traits that the patient you just showed in the video had but yet they still have crowns.

Simon King
She's unique. In fact, I've never maybe seen one other person like her but she was extraordinary. So, most people have a much more minor level of weakness than she does and usually a crown doesn't affect all muscles. I just think that it can affect areas, one shoulder or one hip. And so, all I'm saying is that there is a relationship, and we'll show you more examples of that, between foreign bodies in the teeth and muscle inhibition once you look for it.

Steven Bruce
Kerry Dowson asked what was wrong with the patient? And I guess you're going to say that the problem was the foreign body causing muscle irritation or muscle inhibition. What was she diagnosed with?

Simon King
I sent her to her GP before I treated her just to say, are you sure this isn't MS or something else? And she had never had a formal diagnosis even though she'd had 18 years of this hell and 18 years by the way since the birth of her child, now what do women get while they're pregnant? They get free dentistry and that's why she had the gold crowns put on while she was pregnant and she never recovered from her pregnancy.

Steven Bruce
I had no idea you got free dentistry when you are pregnant. So that's why people do it. And Kerry's actually asked about implants and I guess, you know, all other forms of dentistry, whether they're fillings or implants, whatever else, are they likely to have similar effects? Not necessarily as extreme as that but that will they have some sort of effect?

Simon King
Implants are very tricky, even for me so I hate it when people ask me about implants because with an implant, you've lost your periodontal ligament, and therefore you've lost your main source of sensory input. And so I don't think any of my testing is particularly reliable with implants. Having said that there is not very happy with implants mainly because of a study done by theMELISA.org group and if you're interested, go and look at their articles. There's an article in there on titanium sensitivity, where they tested 56 people, and 54 of them had implants, no, and 19 of them had titanium sensitivity. 54 of them ended up having their implants removed. And according to the study, they all made a significant improvement, which doesn't bode well for the implants, I'm afraid.

Steven Bruce
No, and there are people, I know people, who've had all their teeth implanted which would suggest that they're in danger of all sorts of things.

Simon King
We don't know. And I have to be careful because to do the studies that would be necessary to prove that crowns are a problem or implants, it's going to take a lot more money and determination than I'm ever going to have to be able to do those.

Steven Bruce
Yeah. Now, the nice thing about this show is that this is a discussion so we can freely discuss opinions and possibilities without we're not advertising to anybody here. So, you know, it's nice to know that that possibilities exist. What is the extent of the testing you've done? Because you mentioned your testing a moment ago.

Simon King
When I talk about testing, I'm talking about testing muscle tone and the testing that I do on on every patient, which is basically testing nearly every muscle, every visit, for strength, and to me, there is no problem that's made, that you can't make better by making somebody stronger. And we'll get to the evidence on that soon, but strength is the key to longevity and health and I do everything in my model is that anybody who is sick or injured has some sort of weakness that either has resulted from the injury or is going to cause an injury. So, by making people stronger not only preventing problems, but you're healing them as well.

Steven Bruce
Yeah. People are still intrigued by the mechanism for what happened in that video. Robin particularly asked about it. And also, people are saying to me Well, what about dentures, people have had all their teeth removed? Are they likely to suffer similar problems?

Simon King
Well, dentures I have a video coming up on denture so dentures. Acrylic dentures are a real issue. And acrylic dentures are made from a powder, which is then mixed with a liquid called monomer and monomer if you ever get a chance to sniff it is one of those volatile chemicals that will blow your head off, it is nasty stuff. And the dentist know about melanoma and it's the reason they shine the ultraviolet lights on your fillings. And they also cure monomer by boiling the denture under pressure or subjecting it to ultraviolet light. The trouble is they can't do it completely and there is what's called resting monomer which is monomer that stays within the denture and tends to be exposed by cleaning agents like steradent tablets. And so, you put this monomer in your mouth and you taste it and it plays havoc with your muscle tone. And you will see in a little while, how it's very easy to double the strength of these patients if they have a bad denture, just by curing the monomer in the denture and I have a nail lamp that I do that with because monomer is what they use in nails as well, gel nails. And so, I just put the dentures in there for eight to 10 minutes, if there is significant weakness with an older patient denture, and I put them in there and makes them feel much better.

Steven Bruce
Intriguing. Yeah, fascinating.

Simon King
So, that's why you get these people as they get to a certain age and they've had all their teeth removed, and then where are they, they're often in a nursing home because of their weakness, that's a sign of weakness and it's partly due to the loss of stimulation from the periodontal ligaments.

Steven Bruce
Elspeth has come in again and said is that why the periodontal ligament should always be removed properly?

Simon King
Well, the periodontal ligament being removed properly is just mainly to prevent infection, if there is an infection in the sockets, you don't want the periodontal ligament to sort of harbour that infection. So, the reason why a socket should be cleaned out of the periodontal ligament is to remove any debris in there that could get infected. But one of the downsides of any extraction is that you're losing the periodontal ligament, and there is no way that your brain, there's no other way that your brain can substitute for that lost input.

Steven Bruce
Sonny Matthews says, and you may well know her, because she says as someone who Simon advised to have a crown removed, she can tell us this stuff is mind blowingly life altering. Well, I want to add to that because as someone who has only a week ago when told he has to have a crown fitted, I'm getting a bit anxious and nervous.

Simon King
Okay, well, that's easy. You can have a crown that doesn't have any metal and that is the key just don't. So, there are two types of porcelain crown. You have to be careful here because the dentist will offer you a porcelain crown. But what they give you is called a bonded porcelain crown. And a bonded porcelain is a metal crown with a bonded layer of porcelain over it. So, this is, in fact a metal crown with a porcelain layer. And you do not want that crown, you need to make sure that any crown that you have put in does not have a metal lining. And so, it's much more compatible with the soft tissues of your gum, the crown can be in contact with the gum as long as there's no metal involved.

Steven Bruce
Right? This crown is going to be implanted around a whole load of metalwork that's already in my teeth. I think the amalgam goes into the fillings that has recently split.

Simon King
Okay, well, if you're having a crown, the amalgam must be removed first. So, you don't want to leave an amalgam preparation and put a crown over top of it. That would be a nightmare.

Steven Bruce
I shall instruct my dentist accordingly. I said I shall instruct my dentist accordingly.

Simon King
You must do, you mustn't trust dentists. So that's rule number one is don't trust dentists.

Steven Bruce
We could have a long talk about that, couldn't we? It's a great profession to get into because you can't avoid dentists and basically, they can tell you anything because no one knows whether they're just trying to market the latest piece of equipment or not.

Simon King
Exactly. It's like all professionals really. The key is no metal. The key is avoid metal, metal is the thing that will irritate a withdrawal reflex more than anything else. And so, avoiding all forms of metal in the body is a good thing to do.

Steven Bruce
So in the in the video we just saw, the lady concerned at one point she had a finger in her mouth and everything went back to normal.

Simon King
Yes, so she was activating the good reflexes that are initiated when you put pressure on the tooth. Back in 1993 a guy named Kemal Turker did this research in Adelaide and he pushed on central incisor and he was able to measure with a micro electrode the facilitation of the masseter muscle. And then he came and tapped on the incisor and he got immediate inhibition of the masseter muscle. So, he was showing back in 1993, how input from the teeth create output to the muscle. And that's been it's been done many times. And now we know that the periodontal ligament is actually providing the same sort of, has the same sort of receptors in it as muscle spindle

Steven Bruce
Iqbal's sent in question asking whether foreign bodies of any sort can have this effect, for example, joint replacements?

Simon King
These are all very good questions. Thank you. What I'm dealing with is sensory input, now joint replacement, it takes a screw down the centre of bone marrow and there are no sensory nerves down there, there's nothing sensory, so you can put a screw down the centre of a bone and it has no effect. And that's why relatively hip replacements, are good proprioceptively. People can get back to normal balance and normal movement, normal facilitation. The problems are more with other metals. Let's say you have a plate in an arm or a leg, or you have a screw that is hitting the underside of the dermis. Those can irritate. So, it's only contact with sensory nerves that are the problem. That's why you could have a piece of metal in your liver or your brain and it wouldn't really show up in muscle tone issues.

Steven Bruce
Right. Okay. And Bob has asked if you could explain when you talk about muscle testing, are you talking about kinesiology testing or standard orthopaedic testing?

Simon King
So I am talking about the ability of a muscle to go into a concentric contraction. So, I am very particular that my testing is different to how virtually everybody else does testing. So, whenever you see me do a test, all I'm doing is waiting for the patient to engage, I'm waiting for them to engage, and they are engaging against me and going into a concentric contraction against my resistance. So, I need to know that their muscle can contract for a range of motion, under a bit of resistance, sometimes quite a lot of resistance. And if they can do that, that is a good myotatic reflex. Now a bad myotatic reflex aninhibited muscle, they start to contract but it never, it can't get stronger. So, muscles have something called the treppe effect or the staircase effect. They get stronger for two seconds. And if you just put some resistance on it and then the muscle just can't get stronger, that's an inhibited muscle. And that is my criteria for what is normal function and what is abnormal.

Steven Bruce
Okay, more questions about the periodontal ligament. I don't know who asked this but the question is, are you saying that the ligament has golgi tendon organs or spindle fibres when you say it's like a muscle?

Simon King
The effect of the function of the periodontal ligament is the same as the function of the muscle spindle in that it provides constant afferent input into the central nervous system.

Steven Bruce
Right. Okay. I'm afraid people would like you to recap as well on what that lamp was doing that you demonstrated a little while earlier.

Simon King
You put a denture that you, so a patient is weak everywhere, they have a lot of weakness. And you take their denture out and they suddenly regain all this strength. You might suspect them that tasting the denture makes them weak and you can actually do that you can put it on their on their tongue, I can show you video if you like. And if you want to get rid of the monomer you put it under an ultraviolet light for about eight to 10 minutes.

Simon King
Let's do this study here, the one left behind.

Steven Bruce
Right? Okay, I'll bring that one up full screen. I can just find it here.

Simon King

So, this was a study done in 2000. It's published in 2008. They took 8762 men, and they followed them for 18 years. What they did at the start of the study was they tested their strength, they got them to do a one rep maximum benchpress and a one rep maximum leg press. And they figured out how strong these men were and then they saw how many of them died over the next 19 years. And so, they found that the weaker you are the early you die, and the stronger you are the longer you live. If we go on to the next slide. And they found this applied with deaths of all causes, including cancer. So, in the top left, here, you've got people under 60, with all-cause mortality, and you'll see that while the middle third and the strongest theird are about the same, you don't really want to be in the weakest. And so that's all cause. The bottom left is cancer mortality for the under 60s. On the upper right, you've got all-cause mortality for the oldest over 60s. And you can see that there's a linear relationship between strength and longevity, more than twice the deaths in the weakest better than the strongest third, and in the cancer mortality, about four times greater deaths from cancer in the weakest compared to the strongest. So I have now compiled 60 studies, 60 other studies that all suggest the stronger you are the longer you live, and you can find those on my website at afferentinput.org/mortality. And so, there's all of the studies there that link mortality and morbidity to muscle weakness.

Steven Bruce
Okay, I was gonna be a bit mischievous there when the first slide said they've taken a group of patients between 20 and 82. And they found that certain proportion died, and I thought but those are the ones presumably at the upper end of the age spectrum, very likely to die within 19 years.

Simon King
This was a very, very well done study, they accounted for everything, they tried to account for BMI and activity levels and everything that they could think of every confounder they could think of, they tried to control for. And even after all those controls, they still found the effect of strength was robust.

Steven Bruce
Yeah, Kerry's come in with a few more questions about crowns, you've really piqued some interest.

Simon King
I know, people are fascinated but it's really a difficult area to do. Because our patients are not coming in to ask about their teeth, and it's very, very hard to become expert enough in dentistry to help them. But for some cases, that's the only thing that will help them.

Steven Bruce
Well she says what lining should people have with their crowns?

Simon King
So, the best crowns are usually pure porcelain, you can make them out of pure porcelain. A lot of dentists do zirconium crowns which are okay, I prefer the pure porcelain. And I particularly like a technology called cerec, a ceric machine will cut you out a solid porcelain crown on the spot. So, it's one visit. You have your old crown off, or you have a crown prepared and they give you a new crown on the spot and you're done.

Steven Bruce
My anxiety and my nervousness has just evaporated because that's what they've sold me for whenever I go back to my crown.

Simon King
Oh, there you go. That's a solid porcelain crown without any metal lining.

Steven Bruce
Good. I'm very pleased. Robin's asked about how the foreign bodies are irritating the nervous system, what's the pathway that's being affected?

Simon King
So, your skin is so sensitive, it can feel one hair move. And it just depends on which sensors are being irritated, and which type of sensors so you can have pain irritation or pain sensors or you could have stretch or you could have hot or cold, and they all feed back into those 10,000 inputs into the motor neuron. So, all of those 10,000 inputs are either coming from muscle spindles, but a lot of them are coming through that monosynaptic reflex from your skin sensors. So that's the pathway for the withdrawal reflex which is a monosynaptic reflex. And that's why your hand's leaving the hot iron even before your brains aware of it because it's a monosynaptic reflex, the withdrawal reflex acts much faster than the brain can.

Steven Bruce
Yeah. I'm just going back to what you said about bone marrow earlier on. Darren says he thought there was new evidence of sensory receptors in bone marrow. Darren, if you could share that reference with us. That will be very helpful. And yeah, maybe it will affect your opinion on joint replacements, I don't know. Graham asked whether tattoos have an effect?

Simon King
So, tattoos, obviously are a nail or a needle that is constantly piercing skin. Of course, that's going to have an effect at the time. And that effect tends to last about two or three weeks, and then it seems to ease off and go away so you don't find proprioceptive effects from tattoos. Beyond about two or three weeks.

Steven Bruce
Okay, good. I've got some more questions. But let's save those up for a bit so that you can move on for a bit with some more of the videos perhaps that you've got here.

video plays in background

Steven Bruce
Again, she seems very pleased.

Simon King
Yeah. And I was too, the argument against muscle testing sometimes that you can force the results so it's a subjective test. If you test the way that I teach it, it's very hard to be subjective, so you can't impose your will on the patient using the testing that I do. But I've always wanted to have objective evidence of increase in strength. And it's not always possible, but when it is, I like to have it available.

Steven Bruce
So, talk me through the mechanism of action in that last patient then.

Simon King
So, she obviously had inhibited deltoid and shoulder abductors when her head was forward. This is when she was getting headaches and working in school that she was obviously not able to fire the joint receptors from a C5 in that position. Or maybe there was inhibition in the muscle spindles in the rotatores and the supporting muscles of those vertebrae in that position, and the adjustments stimulated the action of the muscle spindles. And that restored the input to the nervous system, which activated her abductors. And that's as homegrown as I can get it, but I can't do any better in my explanation than that. I don't know how we're ever going to get there. But we probably will.

Steven Bruce
In terms of that particular patient, presumably there might have been underlying factors which caused that problem in the neck. Does that mean that there's more to your treatment than just the one adjustment and that there's something to try and prevent recurrence?

Simon King
Usually there is but, in her case, it was just the one adjustment and I saw her 15 years later and she hadn't needed any other treatment and hadn't had any more headaches.

Steven Bruce
Excellent. Harry's asked about gold crowns. Apparently, they're a nonreactive metal are they okay?

Simon King
Well that's what I used to think. But that first case that you saw they were gold crowns. And so gold crowns are metal and although they're nonreactive and not poisonous, they are irritating. So, the whole deal with this is that it's an irritation to the nervous system. You know, all life is a measure of inputs and outputs and we can have nutritional deficiencies and toxicities and we can have emotional deficiencies and toxicities. This is the nervous system getting stimulation in and then providing motor output out and also sometimes glandular. And so, you've got this input and output and you have to make sure the input is good, so you get good output.

Steven Bruce
Sally's asked about belly button piercings but I suspect that you've got something on that?

Simon King
It's next, I think.

video plays in background

Steven Bruce
It's going to be a tough call with a lot of people getting them to take their piercings out isn't it?

Simon King
It is! A lot of people would rather lose an arm and a piercing. It's hard work, I tell ya!

Steven Bruce
So, let's, instead of going down the predictable route here of how do we have that conversation, what are the alternative things they can pierce themselves with that don't cause a problem?

Simon King
Well, as long as it's not metal, so you can survive wood or ceramics or glass or the favourite is Teflon or plastic. And they're far less irritating. They can be a bit irritating but much less. So, somebody insists on keeping a piercing, plastics the way to go. And they're pretty good. But of course, the other option is just get strong in every other way and don't wear piercings or jewellery very often. So just get yourself as free of jewellery as you can most of the time.

Steven Bruce
You wave your hands there, does that mean that rings, they're not actually piercing but are they, metal contact with the skin is that going to cause irritation?

Simon King
It can, not in a big way but it can. Any sort of metal in contact with the skin will provoke the withdrawal reflex.

Steven Bruce
We had a question predictably about earrings, they're metal, they're piercings and I guess that the same applies does it?

Simon King
We're gonna get there.

Steven Bruce
Before we do that, again, you were talking a little bit about getting stronger again there. Mike's actually asked, well if the theory about you live longer if you're stronger is correct, why are bodybuilders and other gym addicts not the most long lived on the planet?

Simon King

Well, you're talking- So this is a basic misconception, when we say strength you're presuming that strength comes from activity and training. And my argument once you understand afferent input is, that's not necessarily true. So, we're talking about the innate strength of the nervous system, rather than the developed strength of power. And my argument is always people need to be strong to exercise, but you can't exercise a neurological problem better. So you can't like with a nail in your foot. No matter how much you work that quadriceps muscle, you're never going to strengthen it because it's inhibited. And so that you can only get stronger through exercise. Once you have the normal muscle tone.

Steven Bruce
I have a question here, which I think may well be outside the remit of this discussion, but Salame has asked about a patient of hers who has face pain and dribbling afterroot canal treatment. Have you got any options or ideas about that?

Simon King
Well, a lot of those face pains and trigeminal neuralgia is most likely, so many of them are dental. And you really if it's happened after a root canal, chances are the root canal's gone bad, there's still an infection in it and it can only be solved by more dentistry.

Steven Bruce
And back to the sort of surface adornment. People are now asking me about watches and smart watches, which may be less metallic, I guess, than others. Again, some effect from those?

Simon King
Some effect. Yeah. We're not too sure about the smart watches, it seems to be a bit variable. Certainly, metallic watches have a minimal effect. So, one of the effects you'll see is, necklaces have a much bigger effect. And then chains because the necklace is an irritant around the back of your neck. And as you irritate this area of skin obviously your body subconsciously is trying to get away from the irritation. So, what you get is contraction, is facilitation of your flexors and corresponding inhibition of your extensors. And the roughness of the chain also has an effect. So, when you get a chain link chain, it's more irritating than a very fine chair. So, chains, I remember one guy with a classic slipped disk he was in agony, and typical posture, walking with a slip disc and he laid down and I did a few things but I got him up and he wandered around, said, that's amazing, I can't believe that's almost all gone. And I said, come here and I picked up his gold chain and I just laid it around his neck and his knees buckled and he collapsed back into the disc thing again. Well, he came back a week later. And he said, you know, I've had my back pain for five months since my birthday, since my wife gave me the chain. And it went away for two weeks when I went to Greece and I didn't take the chain, been back for three months wearing the chain. And so, he was able to work it out for himself that the chain was the cause, inhibited lumbar extensors and therefore that had allowed his disc to fail.

Steven Bruce
Interesting, and you mentioned acupuncture earlier on and James has asked what's the effect of inserting needles in either dry needling or acupuncture?

Simon King
So dry needling or an acupuncture needle is the withdrawal effect isn't it? It's stimulating contraction of some muscles and inhibition of others. And we'll get on to how this makes a difference to organ systems and glandular function and all sorts of other things. But if you're gonna put a needle in someone, you are affecting their muscle tone, just like acupressure would as well. The trouble is when you stop the acupressure you've lost your inputs. And when you take the needle out, you still got some input, irritated the tissues, more than you would have would just straight pressure. But you've still got some sort of residual input. This is why I think a lot of the studies that use placebo acupuncture, where they're still using a needle, but they're not piercing the skin tend to have the same results as a proper acupuncture needle, they're both providing an afferent input, changing muscle tone, and you get approximately the same effect. So yes, it's still withdrawal reflex and it's still explained by the afferent input.

Steven Bruce
Okay, before I go on to any more questions so we move along a bit?

Simon King
So, she had two years of back pain she took the stud out and one adjustment and she was completely fine after that. Of course, the belly stud, if you put a nail through your tummy, you get contraction of the flexors and again you get inhibition of the extensors, and then your back is unstable and not as strong as it should be. And it's only a matter of time before something gives, you sprain or strain something.

Steven Bruce
I've noticed you're wearing glasses, John has asked about metal frame glasses.

Simon King
If the metal is in contact with the skin, that can be a bit tricky. It's rare. Most people have plastic attached to this. And of course, our body's used to filtering out non-threatening inputs. But there's something about metal that's very threatening. It's years of cold steel or just we don't know whether it's the conductivity of the steel or the coldness of it. We don't know what it is about the mental that creates this massive effect that is more of an effect than any other sort of irritant.

Steven Bruce
I'm reminded of Corporal Jones in Dad's Army, "They don't like it up 'em!"

Simon King
Nobody likes it up 'em.

Steven Bruce
And I've got a lengthy question here, Sally has asked about jewellery she says she understands that with muscles working in pairs, the spinal muscles are working opposite the abdominal muscles. If you get unlucky with an abdominal piercing which stimulates the withdrawal reflex, your abs go into subtle contraction, which inhibits the spinal muscles. If any of your back-pain patients have a belly button piercing, she'd always recommend trialling the removal or swap for plastic etc. She's had a long-term

weak patient who swapped her belly button piercing to a plastic one and is so much better. Sorry I thought that was gonna be a question. It wasn't it was just reinforcing what you already said.

Simon King
She's one of my students.

Steven Bruce
Well, she should have announced that she's biased in her questioning. But I mean convincing. So, with that last patience. I mean, a conventional chiropractor, which of course you're not, I imagine would go down similar examination route to a conventional osteopath. You'd go through range of motion testing and all sorts of other things in order to work out what it was that's causing the low back pain. I'm taking it from what you've said that muscle inhibition due to some form of foreign body interference is quite high up on your list.

Simon King
My whole examination is based around muscle tone, and I don't mind what I'm going to do to restore normal muscle tone. But because I'm often seeing people referred to me by other practitioners, they've often had all of the conventional treatments, and there's not much left except foreign bodies, which nobody else has considered could be part of their issue. And so, yes, because of my history and my experience, I'm always on the lookout for bad sensory inputs. And, of course, there's so many different things that could be but the obvious one is metal.

Steven Bruce
It's a very interesting one too because nowhere in my training and actually so far in my osteopathic experience, have I ever seen someone have, as a standard question on their case history, do you have any body piercing. It seldom comes up.

Simon King
Yes, it doesn't, nobody's looking for it because nobody is aware of it. And isn't it odd though that you can have acupuncture but the acupuncturist will let you leave your earrings in or your piercing, to me it makes no sense but there it is.

Steven Bruce
Okay. But Morag's asked about what was actually going on in one of the last videos when the patient actually touches the piercing all of a sudden it improves. What's the mechanism there?

Simon King
Our nervous system is very sensitive to change in the environment. My phone just rang. All of my attention was diverted on the phone. We're very sensitive to changing environment. If you can change any sort of receptor, you will get an instantaneous change in the input. And that's what you're doing when you irritate the piercing. So, if you have a piercing through the ear, all you need to do is squeeze it. And if a weak muscle then comes back to strength, you know that that's likely to be an issue, even though it's temporary, even though you haven't taken it out, you've temporarily changed the input, and

that changes the output, then you remove it and the weakness returns to normal. And then you know, you're on a winner there.

Steven Bruce
Can I take you back to teeth again, because Elspeth was asked about Invisalign, orthodontics, and maybe we should talk about orthodontics, generally and braces and so on. Are their forms of orthodontistry which are acceptable, that don't have these effects?

Simon King
So Invisalign is probably a good option. It's expensive, but at least it's not metal Invisalign. Yeah, so it's a fairly good option. That orthodontics for kids is a temporary insult to the nervous system and will be a problem. But fortunately, they're coming off. What you don't want to do with orthodontics, and fortunately, they don't do it anymore or hardly ever is extract teeth, you really don't want to take teeth out, you need to expand the bones to fit the teeth rather than say, I think that there's too many teeth for the bones. And so expanding mandible and maxilla is a much better option than pulling teeth. So, try to retain teeth at all costs. And the only other thing about orthodontics is at the end of orthodontics, you often get a metal retainer, a wire that goes across the inside of the teeth. And we'll show you some examples of that. I've never seen a good one. I don't think they're safe. And I would encourage you to and they cause often central weakness spinal weakness, really severe spinal weakness that can be disabling for or career changing for a young athlete or young students or college students so watch out for retainers

Steven Bruce
You said that's the orthodontistry is relatively okay for children because it's going to come out eventually but this is a serious developmental stage in their life. Do you think it might have any long-term effects? Muscle inhibition is going to have such effects as we've seen already with your videos.

Simon King
I'm sure it does on very many of them, it's just how do you argue? By the time I see the parents bring the child to me with problems, they've already committed to the orthodontics and it's impossible for me to say go and have all of these removed so I don't have any other option really except managing the state as I go through it. And fortunately, when they come off and I can try and heal whatever damage has been done.

video plays in background

Simon King
So, you can do your own placebo-controlled trial.

Steven Bruce
Did you try with that patient anything else to distract their nervous system? I don't know make her grab a tennis ball in the left hand or did you go straight for pressure on the teeth?

Simon King
Of course, I've tried every connotation of this over the years. Like said, I know about bias. And I don't want to introduce any bias, I'm very careful to introduce placebo challenges. So, in a lot of cases I'll just get into bite on a random tooth, and see if that changes anything. And then just go through just make sure that I'm not pre-empting or promoting or prompting them in any way.

Steven Bruce
So again, with a patient, you said this woman had a car accident, so what has changed in the car accident?

Simon King
So, she already had the crown, but then the crown creates weakness in her neck or inhibition of neck, in the moment of the car accident she's now not got the ability to stabilise the vertebra and after the car accident, she hasn't gotten all the muscle tone to hold the vertebra so they'll heal properly. And for twelve years her whiplash never got better. Whereas had I been or somebody else been in the car with her, we would have been better in two weeks. She is not better in 12 years. This is the problem with this approach that it's what you've done this problem. It's not what you've done. It's who you are, how intrinsically strong you are that matters. Because I noticed this back in 1998, I had two identical cases come in, identical symptoms, identical in every way. One of them was better. And so, I treated them exactly the same. One of them was better in two weeks and the other one was not better in 10. So, it was nothing to do with the treatment and it has nothing to do with the injury. It had to do with some other factor. And my opinion now is that it's this internal weakness that we have because of aftferent input.

Steven Bruce
How bad is for you? I've had a couple of questions about copper bracelets, which are supposed to be life enhancing and intrauterine devices as well.

Simon King
Copper can be beneficial. I suspect that when you put a copper bracelet on, it creates an amount of inhibition, which might be a bit relaxing, and therefore might in itself reduce an inflammatory change. I think it's fairly short lived. But I think once people feel that effect, they're very reluctant to take copper off. And then it sort of becomes a self-fulfilling, so I don't think it does much. It's certainly not very harmful. So, I'm happy for people wear the copper bracelets if they want to.

Steven Bruce
And intrauterine coils?

Simon King
They can be a problem with some women and I suspect it's due to misapplication like just being put in wrong in some way. And I don't know how they're supposed to be put in right. But they can create muscle inhibition if they're not good. And the test is take them out and see if it see recovers

Steven Bruce
And hernia meshes. What about those?

Simon King
They can be a nightmare. So, I actually have a technique. In fact, I might be able to share it with you a technique of testing for inguinal hernias. And I find it extremely easy and satisfying, but meshes can be very irritating and a real problem. So, I wish they wouldn't use mesh, I really do. So, the test for inguinal hernia, my test for inguinal hernia, is to put the toe outwards at 45 degrees and bring the leg up straight at 45 degrees of abduction and flexion. So, you're pushing up and out and bring that up as high as you can, and then just gently ask the person to go further and resist that motion. Now, if that's weak on one side, you suspect some sort of inguinal ligaments problem. We can't say that directly it's a hernia, but it's probably a direct hernia. And so, the indirect hernia is the one that produces a lump these don't tend to although you can also help those ones. But all you do is you drag the inguinal hernia up and out as the person raises their leg. So, they bend the knee, put the foot to the ceiling, and then put their leg down, bend the knee foot to the ceiling, put the leg down. And this inguinal ligament repair has an effect of the whole pelvic girdle, the pubic symphysis and the sacroiliac joint. So, if you're struggling with sacroiliac joint pain, it's probably an inguinal hernia. And if you're into SOT, and you're struggling with category twos all the time check them for inguinal disruption.

Steven Bruce
SOT being Sacro Occipital Technique, which osteopaths call Cranio Sacral Technique. And Mike says, can you clarify timescales here? Could someone cope well with a necklace and it still be the cause of a recent acute presentation?

Simon King
Yes, so you can, that's the problem. You have a crown put in or wear a necklace that you're given when you're 18, and you're strong enough. As long as you never need those inhibited muscles to work fully, you'll never have an injury and you'll never have any pain. So, when you do have a problem, like 12 years ago with a car accident, you never suspect that the crown's got anything to do with it, or the necklace. And so yes, of course, you can live with these inhibitions for many years, and they just cause gradual deterioration, osteoarthritis, which, you know, is just considered normal, but it's due to muscle inhibition.

Steven Bruce
Carrie's asked whether you could demonstrate that inguinal hernia technique. It's a shame we're not in the studio, because in the studio, we could do it properly on the table.

Simon King
The patient is. Yeah, the test is up and out that way. And the fix for it is pulling up on the ligament and up there and then down. Do that six times. Preferably at the spot where the hernia is.

Steven Bruce
Excellent. Thank you. I hope Carrie appreciates that. Elspeth's asked another one. She doesn't like plastic glasses, do contact lenses have any detrimental effects?

Simon King
I've never seen proprioceptive effects from a contact lens. They seem to be relatively safe.

Steven Bruce
And what about Kevlar in teeth braces?

Simon King
Kevlar teeth braces. I don't know of that. As long as it's not metal, it's likely to be okay.

Steven Bruce
Okay, we're beginning to run out of time. We got 10 minutes left on this. Now, I would like to know, it's only fair you having gone through all this, that you tell us about the training courses you run. But you may have other videos or other things that you want to show us first. We got 10 minutes left and we will get more questions, well, we already have more questions.

Simon King
Well, so I run training for health professionals. My website is afferentinput.org and I recently ran a very successful live streaming seminar. So, I recorded a seminar in Italy. And it was professionally recorded, and we did it over two days. And I've split it up into five sessions of about an hour and a half. And I'm gonna run that again next week. So, if anybody wants a free muscle testing seminar, you can go to afferentinput.org/livestream and you can join that or there's also courses that are available on there as well. So sign up and you can get notifications of events. There's free courses there. There's the theory that I've talked about, all the theory that you need to understand. A lot of the references are there, and also you can pick up some training there if you want.

Steven Bruce
You a little unclear when you said the name, I hope people can read it on the slide behind me, but it's afferentinput.org. And /livestream will take them to the page you were talking about.

Simon King
So I'll show you a test that you might not have seen before. I'll show you this test and I hopefully this will be really useful to get you started into testing.

Simon King
on video Now, it's really hard to test the spine muscles directly, really hard to test lumbar spine muscles. So, I'm going to show you a couple of ways of doing really interesting and useful tests and not easy to do, take a bit of practice. So, make sure you give this a few goes before you give up, okay, don't give up. So, what you do is you ask them to lift the leg as hard as they can. So, you're doing a straight leg raise for anybody with lumbar problems and then you get them to point the toe and then they're gonna roll towards you. So, you say roll over here. You must make sure that their lumbar spine rolls, okay, it's not just a head movement. So, they're rolling the lumbar spine. Now they're twisting, okay, this is the lumbar spine rotators. And of course, if you can get stability, twisting in the lumbar spine that's most of the battle. So then when they are there, they're going to push down towards the

floor and you're going to resist and you're gonna make sure that they can drive down towards the floor and they're not cheating by pushing you down or away from and so they come down to the floor, so they're using the lumbar rotators. And then from that position, stay there, you're going to change this and you're gonna ask them to unwind, lift towards the ceiling and now they're gonna go back the other way. So, you're asking them to wind down that way using one set of obliques and up the other way so unwind. And then you go over to do the other leg, lift this leg high, you do a straight leg raise on the other side, you ask them to roll and then pull down towards the floor and then up towards the ceiling. And it's as easy as that, really easy to do this supine. I'll show you the other part of this which is prone, lay on your tummy for me, I've showed you in the past that with Max where the toe was pointed, they lift up high and they push straight up. What you do then is you extend that so that they roll backwards towards you. And again, you're doing the lumbar rotators. Take your hand up so that you can feel that they are twisting and although there's no real contact needed here, stabilise yourself, hold behind the ball of the foot and you're going to push straight forward there, and then try and untwist them. Okay, so you're trying to untwist them, you're not pushing down or any other direction except straight across, untwist them, and if that fails, and they go like that, you know, they've got a lumbar rotational weakness. So, lift this leg up, roll backwards and have them pull back. And that's the other side. Those four tests, quick and easy to test lumbar rotation, extremely valuable. And then if you want to know how to fix that instantly and usually permanently, I can show you how to do that without afferent input paradigm course, which is online at afferentinput.org.

Simon King
Yeah, maybe it's a test you haven't considered before. It's a useful one.

Steven Bruce
Well, I can honestly say, I have never seen it before. So, I didn't know how many of our viewers have. Ian Stuart's asked a thorny question, do vaccines have a role to play in any of this?

Simon King
I'm not allowed to comment. That'll get me in real trouble. So, vaccines won't have a proprioceptive effect. So, all of the other effects of vaccines.

Steven Bruce
Right. Okay. So, I think that's the answer we want for this question. We don't want to go down the thorny routes of whether they're dangerous, whether they work, whether they're necessary, anything like that. But in terms of what we've discussed today, they don't have a role. Joseph asked about these face masks we have to wear at the moment. What about that metal strip over the nose?

Simon King
Well, it's normally encased in mesh, and it's such a minor irritant, it's probably not a not a big factor. As long as it's not metal directly in contact with the skin but I don't know whether they are, I think minor encased I don't think they're on the skin. If they're on the skin that can be a bit of irritating.

Steven Bruce

Yeah, sure. I suppose like orthodontics they get removed fairly quickly, rather more quickly than orthodontics. How about knives and forks?

Simon King
So, we obviously have adapted to be able to hold metal and to be skillful with swords, knives and forks. So no, there's not gonna be any proprioceptive effects from that. It's really on the softer more sensitive skin. But of course, you get a splinter in your finger or a shard of metal in your eye. You're in big trouble. That's a pretty strong withdrawal effect.

Steven Bruce
Yeah, indeed. Robin's asked how you explain back pain in folks who have no foreign objects?

Simon King
Well, so back pain, it's going to have one or two causes either inhibition and occasionally it can be hyper facilitation or over facilitation. So, you can have, just like I've been talking about inhibition as a problem, you can sometimes get the opposite which is muscles that are hypertonic and they tend to come across as achy and sore and those patients they complain of tension and trigger points and other things. So, muscles, I mean chiropractors don't move bones, muscles do right and osteopaths don't move bones, so we have to address the muscle tone that is leading to the pain situation. And so, it would be rare, very rare, that I couldn't find a weakness that was either causing or caused by the pain. Now of course if I can find nothing to strengthen the weakness, I get concerned about that and then I can refer out. That happens very rarely. But if there's a bone disease or a cancer, I'm going to pick it up because well, I'm not going to diagnose it but I can pick up that it's not suitable for conservative care and refer it out because I can't find anything to strengthen those muscles. And if I can, then I can fix it.

Steven Bruce
Thank you, Simon, how many people are allowed on your course? Well, the one you are running next week.

Simon King
it's up to about 100.

Steven Bruce
Okay. And is there a deadline for signing up?

Simon King
I took your cue, Steven, and I put it on at 7:30 at night, so I hope you don't have any courses running then. But I put it on at 7:30 at night. I did the first one during the early stage of the lockdown at like 11 o clock. But we've changed to 7:30 at night to see if it's, well, you seem to do well. I'm copying you, Steven, you're the leader of the pack here.

Steven Bruce
I feel very flattered, Simon. I was told that you had a very distinctive and different approach to examination and treatment. And I think you've proved that here and it was your chiropractor colleagues,

or you're not a chiropractor, of course, but your colleagues who are chiropractors who said that. I think it's been a fascinating discussion this evening. I hope you get lots of people sign up on Monday, because I think there's a lot to be learned here.

Simon King
It is a challenging thing. And I know people have this, this almost blindness about muscles. But I hope it is enlightening. And I couldn't find a way of practicing without it. If I couldn't test muscles, I'm not sure that I could practice. I'm all about competence so I think that we need to be as competent as we can be. And getting specific and diagnostic is my way of doing that.

Steven Bruce
Well it's been brilliant, and I'm sure everybody's really enjoyed it. So, thank you very much for giving up your evening this week. And I hope it all goes well when you do your future seminars at the same time next week.

Simon King
An honour and a pleasure.

Steven Bruce
Thank you.