Academy of PHYSICAL MEDICINE

Bone Fragility Ref108NB

with Mr Nick Birch

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RAW TRANSCRIPT - UNEDITED

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Steven Bruce
Good evening and welcome to the Academy of physical medicine for the first of our show is back in the studio since we had locked down all those many months ago, I'm very excited about this. And I knew my team as well, because they haven't been behind the cameras are in the production booth for a very long time. So getting it all together this evening has been quite exciting, not least because of course, we are having to apply all those covid precautions that you'd expect in a clinic. And as normal. We've got our clinic design devised here, divided here into a clinic end and a waiting room and, and in the waiting room and at the moment are our three models that we're using for this evening. So we've got three models in that model Say hello. Welcome. Thank you for joining us. Thank you for taking your time out to come and join us at the Academy. As you will have seen the models are all wearing their facemask just as they would in the clinic. And you will see we're adhering to all sorts of other COVID measures as we go along. Most importantly, this evening, I'm joined by Mr. Nick Burch. Nick's been one of my guests on many occasions in the past and he is a specialist, spinal consultant, orthopaedic spinal consultant, working out in Northampton. He's been in to talk to us about spondylus thesis about bone fragility about all sorts of bone dysfunctions in the past. This evening, we're going to be talking about bone fragility and bone density, Nick, I'd love to shake your hand but we're not allowed to but it's a great place to have your virtual shake, virtual shake. Delighted to

be here. Yeah.

Steven Bruce

And you know, your first guest is the walk down. Great. Nick, you better explain to us all one of these, you're gonna do this thing.

Yeah, so we got to do some health assessments. We're using rems technology. rems is radio frequency echographic multi spectrometry better to say rems, it's the new technology that's going to challenge dexa dexa is our standard X ray based bone density measurement device. It's in a hospital, you have to have a big room, it's got to be that shielded, you have to have big computers, you go along you have you scan, so you've got to go to the hospital. And in these days of COVID of course that's an issue. And then at some point your results are sent back to your GP or to your rheumatologist. This is point of care. This is an ultrasound based system using a simple ultrasound probe. It's a highly sophisticated Italian machine. So it's not just your real sound that you get for your abdominal scans. When you go have a baby, it's much more complicated than that is important. is actually because the design is so good. So when you when you when you see the reports, the reports are beautiful, Rebecca better dex reports, which are not beautiful. So so the design is good. And the the output is equivalent to dexa. But of course it's point of care. So I've been around to lots of sports clubs that to politest studios around the country, I take this and come to the back of the card, as you've seen, setting up tonight, it takes about 20 minutes, and I can take the scan to the person. There's no radiation, so there's no danger. Short dex has a very low dose of radiation. And you can probably have lots of dexa scans and not really have a have an issue. But there are other people who don't mind radiation which is which is fine. The accuracy is the same as dexa, which is good. But the benefit of this now with the the software has is it not only tells your your bone density is but it also tells you what your bone toughness is. And that's really key because we've, for a long time wondered, why is it that women with overtly ordinary bone density fracture? So was called osteopenia, which is that that transition to a normal bone and then osteoporosis, why are they fracturing more commonly than B with osteoporosis? This tells us Now, why that is because we have what's called a fertility school. And that's actually measuring how well your bones are made. So put that together as a package. And we have a really good understanding of what is bone health and prediction for fractures in the future.

Steven Bruce
So two quick questions before we start your demonstration as it were, is there any advantage of text for this?

No, is the answer.

Steven Bruce
A second is that back in the 1990s? I remember in my teaching college that they had a little portable job you stuck your foot in and that measure the bone density. That's the value of those are they

quantitative ultrasound is a very useful screening tool. It doesn't give you the degree of accuracy of decks or rems, it's quite good for screening to say, Are you in the zone where it's normal? Or are you in the zone where it's osteoporotic, but it won't give you actual proper diagnosis compared to these more accurate technologies?

Steven Bruce

Okay. Right, should we get our first model? So what Nick's doing right at the moment is just getting the base data for the machinery and he's done this with a couple of models already. So let's just To take their weight and measure their height accurately so that he's got an accurate BMI, which is important for, as you'll see the results you get from this system. The BMI is often said to be quite misleading. Is that not the case here? misleading? what sense? Well, in the sense that people with a high BMI are said to be unhealthy and your average rugby prop for is probably willing to the obese range.

Yeah, it is misleading that sentence. BMI is very important, from the point of view of bone health because the, the higher the BMI you have, the more pressure you put through your bones, your bones are likely to be more mineralized. And so they are the highest. The highest BMI I've ever measured was a woman who was 50. And she had very dense bone. But she had fractured because actually, she's 50, she's not doing very much. So those were very tough. Whereas interesting, whereas there, there's a whole bunch of rugby players who've got normally should be nice. But then if they look forwards, they've been thrown up into the air, two metres coming down, crash on their feet, and they have the toughest bones you can possibly imagine. So elephantine so soon as you don't put yourself up onto the couch, myself back. Now, behind you. The first thing we maintain is dignity. Because there's been an obsessive and I have had to look at your head. So if I could get you just to skip your chances, just don't just put your knees that'd be perfect. Thank you very much, sir. Normally, we have the order of the purple town. The purple town is something that so going back to when I was at Moulton, I'd like to put these just at shoulder width that there's just that one wrote out out there. So the order of purple cow maintains decency Have you had in the past? An ultrasound scan, and you're not pregnant? Okay. So you know, it goes gel. And it was cold? Yeah. Okay, good.

Steven Bruce
Microwave, if we could

try that. But the trouble with that is that the gel becomes very runny. And it doesn't it doesn't work that well. So that's fine. So what we do is protect your clothes just with some, some tissue here. So we can just do that there. And then.

Okay, now, have you got and a history of your family?
Okay, have you ever had a friend?

Have you got any long term medical conditions that apply regular treatment, things like thyroid disease, liver, kidney disease, diabetes, and he got problems like celiac disease, Crohn's disease, okay. rheumatoid arthritis. Now dismissed. Take steroids now, do you drink three units of alcohol or more per day? Okay,

Steven Bruce
those using

those will screen there's a screening questions called the fracks calculation. And what that does is it gives us an estimate of population based estimate of what your risk of a fracture is what's going to major osteoporotic fracture, which is either your arm, your spine, or your hip, and then it also subdivides that into the hip as well. And we know that from yours, it's 3.7% chance of you having a major osteoporotic fracture in the next 10 years. And it's about 44% chance, you're

gonna break your head from osteoporosis, very, very low. So you've got a nice 96.3% chance that you will not get a major osteoporotic fracture in the next 10 years. Sounds good.

Steven Bruce
Okay, based purely on BMI, those risk factors you run through system

that's based upon all the data that came out of Sheffield with john Connors was doing recently and has since been taken up by the who World Health Organisation. And what they've done is they've taken a lot of hundreds of thousands of women in fracture and look at what their body composition was and what their risks were, and they put it in an algorithm and on a an analysis of that. And these are the risk factors that are the most important for impair bone health and fractures. Okay. So because we'll be talking, the machine is a little bit irritated and then get on with it. So what we've got now is I don't you can see that is that you've got the outline of your hip, on the right of the femoral head, femoral head, and you can see the hip joint and then that pale white line underneath the red line. That's your neck of femur. And that's the bit we're really interested in because that's the bit that gets more fragile and tends to break and you hear a fractured neck of femur and old ladies And that's that that's the bit where so what I'm doing now is I'm shining the ultrasound at your hip. And it's bouncing off that 3.5 million times a second. So we're going to get about 100. And in 40 seconds, we get about 100 and 60 million pitches. And when it bounces back onto the probe, it's subtly different. And because it's slightly different, it then gives us the information we need to know. Okay, didn't like that. So that's, that's it that Okay, so the first scan, we've got a failed scan, there's a lot, there's no result. And the reason for that is because I don't normally wear gloves, I've got to get used to wearing gloves now. So

it's kind of like that. And get fooled.

Okay, so. So the first thing we hear is that the The great thing about this system is it doesn't matter how many times you do it. Because it's ultrasound. It is repeatable, and there's no risk.

Steven Bruce
And if you do repeat, as I say, you had to do this five times, once he did it five times, and it worked five times, would you find the results to be pretty much the same? You already are very dependent on how you open your mouth? No,

it's operator independent. And as long as you've got it pointed in the right place, then, isn't it? If you could have put to the right place, then the machine recognises the anatomy. The machine recognises the anatomy, and is consistent. That's fine. recognises the anatomy. And let's just do that. And we'll give you the the result the bone result irrespective. So what's what's happening here is that the rubber gloves a slightly, slightly slippery, and I'm trying to hold the probe absolutely steady so that we get exactly the right anatomy. When we do that, then we'll get a result. So

Steven Bruce
many of these machines are in the country. In this country, about six.

There are four in there, maybe, maybe a bit more than that, actually, there are four, I think in research labs and maybe another three or four elsewhere. So they may make this less than 10. Actually, okay, that's better. So now, what's happening now is it's saying analysis in progress. When it's doing that, it means it's got enough information to process your result here, excuse me, and it's going to come up with the result. If you get a few little flashes of a femur, and then it goes off, as we did last time, you know, you haven't got a result. If it goes on too long, and it has to think about it for too long. It often comes back and says but then you get no result. Now, the number of times that I need to do an acquisition where I don't get a result is dependent upon a few things. One is the body composition, your body composition is perfect. And that's fine. It's just a matter of getting used to using a glove. And this is not something we're using much in the past. Because prior to came in, we didn't do that as well. So you get the idea. So So what does that say you before the fall we started I said Where would you be fantastic. Yeah, it's just in the yellow zone. Yeah, yeah. So it's good to know. So what we can do is just to save that and

do that.

Okay, so now we've done that, that's fine. So now go to the spine. So, so for the spine, we go through the abdomen, you don't have to change position, okay, which is fine.

So if I take that off there now and I can just get rid of that which of Gil

that's fine, which is good. Okay, so we maintain the dignity here. With that, so I can't get you to put that up to just up to you Brits. Britain will ask you to do is just put their arms down by your sides, be completely relaxed. So again, protecting you and your clothes from the jail is not toxic. It's just very uncomfortable wandering home with Joe. Okay, so we want to see the first four lumbar vertebrae. So this is the exactly the Same protocol as dexa,

123, and four. And that way.

So first of all looking for the aorta, which is seen as a pulsating black structure, and the bright white behind that, there, the anterior virtual board is the front of the vertebrae. So we know I three is around about the umbilicus. So that's all two there. So one there, what I've got to do is to change some of the settings and see if that's fine. As soon as if I press like that, is that uncomfortable? That's fine. Okay, that's good. So. So on this one on the on the hip scan, it looks at your hip for 40 seconds, and did about 100 and 60 million acquisitions pitches, this looks at each individual vertebra for 20 seconds. It's about 80 million for each individual vertebra. And so it goes on, then it tells me when to move. That's the first one it's done. Now, to make a diagnosis of what your bone health is, on the vertebra, we need at least two threes good, but ideally, four. And each individual vertebra is able to be assessed both for its density, and then they add it all together to give you an overall score. So what we're looking at is what's called a T score, that T score compares your bone to a healthy 30 year old. That's our that's our standard reference. And if you're under 30, you can't have a T score, because you're below the reference. So then we have what's called a Zed score. And Z score compares you to other

people your age. And so that's quite useful for under 30. But also if you're over 75, because the T score when you when you're 45 years older than your reference,

yeah,

it doesn't talk very much of value or relevance is it so. So what we like to do is to people in your age group, and they're nice and young, you get a T score. So looking at you comparing to our reference that you wrote, and then also said scored, see how you fare compared to other women your age? So one question, of course, is why 30 and that's because that's the very best your bone average, that's called peak bone mass. So when you're born, there's no calcium in your bone, you're just cartilage. And then it rises over to 30 and then it stabilises for 10 years and then after 40 it starts to drop and of course around menopause, that's when you get a big drop. So, lots of different factors, but metaphors is a very important one around the age of 4555 which is the usual time for for metaphors, most women

Steven Bruce
may just see many problems below the age of 30 because I'm presuming that originally at least people weren't too concerned with younger people.

Yeah, we do. And the the problems we see in girls who are underweight that have a low BMI So a good example of that, a ballerinas who stopped themselves to reduce their weight and I've done some values for the Royal Ballet and their bone density at the age of 2526 is when that should be really good. It is well below what it should be so despite all that impact yeah just despite despite that so and then unfortunately but low body mass index is a very big predictor of poor bone health because then you combine that they've got poor diet so they're usually not getting enough vitamin D. Now calcium, and magnesium these are all the the key ingredients you need to get bone healthy getting calcium into the system, from the gut into the bloodstream then is the bone itself. Okay, so we're done suit is not what we can do is to dgl you and we're going to go over to the couch. To that's fine. Okay. But so if you'd like to resume your normal state address,

that's perfect. Okay.

Okay, sir, with some software if you're female. So the first thing we know Suzy is that you're 52 years old. You don't mind working. Your wages 61 kilogrammes and your height is 165 which means you have an absolutely normal body mass index 20 foot forward, absolutely. The middle of a range which is perfect, which is Fine. This is our first report. That's your result there today, that little clause in the circle. Okay, now we've got a system here called a traffic light system. And the traffic light system is green, yellow, red, and that shows you nawbo osteopenia and osteoporosis. Okay, so no bone is compared to our, our healthy 30 year old here. Now, when we looked at that, we said, okay, well, if you take your normals, 30 year old, if you're below a certain level, then you're interested in that, and that level is called, it's minus one on your T score. So if you put your T score down here, that's looking at you compared to your 30 year old, healthy person, and minus 2.5 is your 2.1 standard deviations below the average 30 year old. So we look at the way that bone density spreads what's called a normal population, a bell curve,

and, and two standard deviations is now outside of where 95% of people will be for the average. So if you go to one standard deviation below, that's minus one, that's the limit of normal minus one to minus 2.5 is then osteopenia, which is fine, which is what we'd expect. And then below minus 2.5, there's osteoporosis. So you're well off that mountain, which is fine. But if you look here at your Zed score, the Zed score compares you to other women, your age, and your minus 1.3, and Zed score. So you're, you're about 13%, is what that equates to below average with me right now. That's because the average within your range here are about probably mass index of 26. These are related to body mass index. So so it's not just the fact that you've got a number below the average that that's that's not the issue, because we'll get on to the bone toughness in a second. So these are exactly the results that are expected in the femur for you, as you walk today, which, which is fine. And there's your diagnosis, osteopenia, that's the World Health Organisation diagnosis, here is your fracks calculations. And what it says is you've got 3.9% risk of major osteoporotic fracture, that's in your humerus, on the shoulder, wrist, the spine, or the head, also ankle elsewhere satisfied. And then your hip fracture rate is really very small point 4% only, okay, you've got some individual numbers to look at the total femur, and the true cancer, that your cancer is that that bony bit on the outside, you actually feel your hip that when you feel on the outside, that's the cancer. Yeah. So we measure the cancer, we measure the neck, we miss the whole thing. And that's your result there. Now, what's really important is this, this is new technology, the most dexa scans do not have this function this. This is called the fragility score. For dexa. There's something called trabecular bone score, which is the equivalent of this and what it's looking at how well your bones are made. Because it's all very well, I would very dense bones, but if they're made of chalk, they will fracture. Whereas if you've

got very light boats, like a bird, but they've superbly engineered, they weren't fracture. So that's how birds can fly. And they can do all sorts of bits and pieces, they can put huge amounts of pressure through the wings, it's really a skeleton to not break bones. Whereas whereas you know, some of you thought that really dense bone, but who sits around does nothing and does no impact exercise can break bones. Yeah, if you look at your your fragility score is really dwellings, the green zone, you've got really healthy bone, which is which is fantastic. If we don't combine that we now can do is we can update the fracks calculation. So we know that your fat calculation shows you've got a low risk of future fracture. But now what we've got is we can say okay, well look, our rooms fragility school, you've got normal bone toughness, but you're osteopenic. So you have what's called an r three, and an r three then comes in here, it says, actually, it's not bad. Because look, your risk of a hip fracture next five years is between four and 8%. Well, that that's a bit higher than the fracks calculation. This is no you. This is much more accurate than the facts, the fractures of population estimate. Yeah, based upon a whole bunch of different factors. It doesn't take anything about you into consideration, apart from body mass index metaphors and a few other bits and pieces. But this now is measured your individual risk. So that's fine. So that is that. So he said, Here you are three yellow zone, that's the zone, pretty much the same zone as your bone density, which is fine. And then that's your fracks calculation. And then that shows you a nice, pretty picture of the zone of acquisition, so that's fine. So that's your femoral results, and then your spine result, very similar. T score minus two. And they should be very similar. If you get a result. That's very good. is called discordant. And we don't like that, because there shouldn't be a change in your bone density unless there's good reasons. So for instance, you'd had a stroke, and you couldn't use your left leg. That might be quite different bone density from your spine. But once you don't have that, so we expect it to be similar. Minus 1.1. sec school very similar. Don't worry about that red one red one there. That's that's just a graphic. This is a Steven, why the Italians are so good. They've got lots of design, and it's already pretty, etc, that sometimes people get focused on the colours here, what

you got to look at actually is just the overall results here. And actually, Susan's results are fine. And they're very much as predicted, just before

Steven Bruce
you hear them screaming. Yeah, seriously, when you look at that, you see your little crosses, it's in the yellow zone, but it's quite close to the red zone. Yeah, I mean, the lines are, look as they're going down, which makes it would make me potentially think, gosh, it's only a year or two before I'm in the osteopenia, osteoporotic zone, Nick, is I'm obviously interpreting that badly, because you said that Susie's bone structure and strength is good.

No, you're absolutely right. Because if we were doing a full bone health consultation, having gone through the results, what we then talk about is what you do in terms of weight bearing exercise. So why are you going to the gym? Are you doing lots of very bone and bone? enhancing exercise? So impact activity, vary the load varying the frequency? That's the real key to good, strong bones bows that are tough. Okay. And do you have the right diet? So have you got enough calcium going into the system? Have you got d? Do you have that magnesium, boron? So what is your diet? So there's a whole bunch of different things there. Now, in the interest of time, we're not going to go through through all of those today. But they are very important as a total bone health assessment, I would have then gone through that with you would actually sat there. So So for instance, do you have dairy in your diet? Yes, no. Okay. So what you need to be aiming for is calcium around about 1000 milligrammes per day, do you take vitamin D supplements?

No. Okay,

so the government recommends that everybody should take a big, big supplement in this country. So that's, that's one of the few things that government recommendations that that is pretty universal. they reckon 400 international units per day. But actually, you can go much higher than that. And there is some evidence now that if you go to 2000 3000 4000 international units a day, that's actually helpful, coincidentally, vitmain d, is now showing some evidence that's actually protective for respiratory viruses, because it improves the immune system. So it doesn't prevent COVID. But because it makes your immune system work better, it means you might actually then have if you do get COVID, you might actually have a lesser version of it. So having a good vitamin D, is got lots of different reasons to to have that. And it's a really important substance in the body and behaves much more like a hormone, but it does a bit of it. So I would recommend that if anything else from this time tonight, start taking six Monday. Okay, so the other two things I mentioned magnesium, boron, they're there to trace elements that are required to get calcium from the bloodstream into the bone. Whereas basically, the usually is getting calcium from the gut into the bloodstream so that they will play their part in this whole process. So if you're right, because if we do something about that, if we could identify that Susie has actually got either not enough of this council committee or whatever else, or she's not doing enough impact exercise, we can change that. You

Steven Bruce
said a very exercise. Oh, yeah, it's not sufficient for Suzy to become a lock for him. Enough, it's gonna be rare.

Yeah. So So the big problem of that is that if you have a single load going through your spine, or your hip, at a certain load at certain frequency, the deputation will only be to allow to attach to that load vector that'll be that was actually really what you want to do is have a very low and very low frequency if you said it worked out very nicely, and you'll get a much better tougher bone. So so that is important.

Steven Bruce
So why do recycling? Well,

no site recycling is not a weight bearing exercise. So actually, that's that's not that would explain perhaps you know that you wouldn't have particularly tough phone cyclists. I've got a whole bunch of elite sports people and the one with the worst bone density was a cyclist. So whereas normal baseball density is a secondary port, so And anyway, but his is your spine by toughness, nicely the green zone again, so which is fine. So we're going to have an r three on our arsenal. estimate of your, for your practice they are three. And that says that you're actually for you your chance of a major sport fracture next five years is somewhere between 10 and 20%. But you can do something about that. So had we had a bone density that was in the green zone, and by toughness in the green zone, then we've had a lower vote, you know, you've been down here less than five or five or 10. Okay, but because of the osteopenia, that saying, actually, no, there is a slightly higher risk, but you can do something about it, as giving says, and then you should be able to see some pretty pictures down there are some pretty pictures. So why are three hasn't shown up? Not quite sure, because you can see the boat over there. But so we are. So that's the other reports, you get your 10 page report, going through all this. And it gives you now this is this is the very best assessment of bone health that you can have.

Currently,

Steven Bruce
Susan, you're going through some sort of trial?

I am I'm doing a trial for calming down the metaphor symptoms. So to try and get with the hot flashes during the day. What? I can't remember the name of it look so something or

does it work?

Well, I don't know if I'm on the placebo or the actual thing, but the hot flushes have subsided a bit. Yeah, so possibly,

there are lots of lots of gynaecologists who think that an endocrinologist he figured actually, if you if you are metaphors, you should go to HRT automatically. And that's that's very, that's very interesting, you know, because there's controversy about that as well. But the the sitter's

metaphors, cause any hot flashes are born, but there are there are so many metaphors, and they can be highly distressing and very

Steven Bruce
difficult. So I hope it's working for you. And if you think that this report would be of use to the people who are monitoring today.

Yeah, I mean, she's going to get back to the internet by email. And so she's Welcome to say that and they can take a look at that and then see what it's what it adds to it. Yeah.

Yeah, because I did have to have a dexa scan before, and I will have to have another one at the end, which was the results were normal, as far as I know.

It'd be very interesting to compare them. So and So yeah. But if you want to do that we can we can have a zoom console and look at your text results and we can look at your range results and and see where they are. Okay. Okay, only that's Steven silver.

Steven Bruce
Okay. Now next victim onyx model is is Brooke Brooke is actually an osteopath. osteopathy works in my clinic, and also clinic together. Fantastic. And you might recognise her if you've been a member for a while because she has been a model here before. Thank you for coming.

Right? You want to jump up on the camera? Okay, so big towel, maintain dignity. So let's just do that.

session sliders down here, make

sure my underwear doesn't.

Perfect. Okay. Wonderful. So get the legs just that shoulder width again. Let that one rotate out. That's lovely. That's fine. Let's just put that over there so I can get to the hip.

Steven Bruce
What difference Are you expecting here?

So Brooke, Brooke is a couple years younger than Suzy. So not going to call. That premium course is going to be different from the pyramid balls and firstman balls because with the implicit oestrogen. So without without oestrogen in your body with decreasing amounts of restrict you're going to have less of a healthy set of bands because he seems so important for bands

Steven Bruce

broke, have you got any reason to be concerned? Do you reckon you're healthy? He did also exercise? I try. Could you do?

Like classes in time? Okay.

Let's just put that up. And

so the risk factor that you might have is if you have any family history of osteoporosis, because otherwise you're perfectly healthy. We've been through those questions and so we know we know that you you're not major risk.

Okay, so just finding outside There's your cancer just there, which is fine, which means that there is going to be here

with the probe in the right direction, coming up over the counter. So there, we begin to see the That that nice bright signal, come across the front, there's your head. So the one thing, of course, that this can't do

Steven Bruce
is to, when we bring up the screen,

it can't look at

somebody who's had metalwork in their head nor condenser, that's exactly the same. So if you'd had a fracture, or hip replacement, then we'd have to do the other side. So since you've had neither, that's fine. So what you can see there on the right hand side, again, as soon as you can see the femoral head, that little gap there with the gaps tab, and then we're shining this at the femoral neck, and then on the left hand side underneath red line is then that's out towards the track counter. And hopefully, what we'll get is a nice acquisition straightaway. So you almost had you 100 and 60 million of sound bounces. Okay, that's a good start, because it's now the machines thinking, sir, and we have actually nicknamed this Sophia, because it's a very well made very beautiful piece of machinery, but lights appeared around somewhat temperamental at times. And so being Italian and so sometimes it's a bit frustrating because you, you do the scan, you think you've got a great acquisition, and then machine goes nap. Particularly actually, in athletic women who've got runners really in case you've got really big muscles. So you've got big muscle, the machine finds it quite difficult to distinguish between the compressed muscle and the bone. And that's, that's quite a challenge for what I have to do is to press very hard on that. So that's that can be quite uncomfortable. This looks encouraging.

Steven Bruce

So finally, the the viewers couldn't hear what Brooke said, If she doesn't put in terms of activity, you're not a runner, and you do take classes and somebody needs to be a runner. He used to be a runner, yeah.

Okay, so your bone density minus 1.1, you're literally only just outside the normal zone, just outside. And that, again, more to do with your body mass index, because your body mass index is in the normal range. If your body mass index was, say 28, much higher. And let's go back. So we've got that spine, so your body mass index 22.4. It's a trade off. Higher body mass index, better bone density, bugs, higher risk of other conditions. So you know, everything wants to trade off. Right? Just do this. So we're just resetting the fracks calculation again, and

then comes up with a very low number, which is fine. Okay, and here's our spine. So let's get this spinal scan done.

So if I just do to gel you there. Let's get

that down. Thank you.

Okay, so if you'd like to put that up, probably something.

Steven Bruce
Someone does a dexa scan take to conduct

a half an hour.

Difference difference in this the dexa scan is that because the dexa is done by the machine and usually a

very well trained and qualified technician, but they don't know what the results are until after it's done. So they have to have what's called post processing. And that's that when they then decide what your results are, so they can't talk you through it. So this is this is immediate results point of care, really his point of care. And so there's our l three, so we can see those three very nicely.

the only the only

you've just had a ball bearing most. And that's that's the only thing that can really stop this system working well is intense bow gas. And because ultrasound can't see through gas. Sometimes we do see people who it's just impossible to get a decent acquisition of the

vertebrae. But if you try a few times, what often happens is that the probe will move the guests around, absolutely. Push it to the side. So we can then get a reasonable view of vertebrae.

Steven Bruce
We have because some people appears the stream didn't go out straight away. for some strange reason that came, we had some questions in the channel, you answered in the beginning. One of them, I think from from India is could you explain the difference between backset and rems? Again?

Yeah, so it takes is an X ray based technology, it uses a low dose of X ray to take a picture of the hip and spine, and then it by comparing the amount of X ray absorbed between soft tissue and bone, and then can tell you what the bone density is. So that's fine. It's a fixed device, obviously, most commonly in hospital, and you need to have a specialist room physicist to make sure that the equipment's working every year, we'll have a specialist technician. And there's also the post processing after that. It's accurate, is reproducible across systems. So if you have a machine that's produced by Hologic, for instance, that will be the same the results on that will be the same anywhere in the world. But it might be different from GE. And, and so they, so they're not consistent across platforms, but within platforms they are. It's the most studied bone density measurement take me millions and millions of data points around the world, which is fine. The same applies for rems, difference being this is portable is therefore point of care. It's reproducible, both across the system, because it's any one system. And also it's independent of the operator. The only thing that distinguishes it from dexa otherwise, is that it hasn't yet got the millions and millions of data points because it's only got several hundred thousand, or about 300 machines in the world that are being used at the moment actively. So, but we're keeping stuff and I've done now, about 1200 scans in the last two and a half, two years and all that data is row first greenbone Yeah. All that data is is kept and we feed that into the acolyte databank. So Brooke, your bone density in your head is slightly below average, but your bone density in your spine is a bit less, below average, and it's nice and green. So that's good.

Which is fine. So it's okay, let's detail you do that. It'd be very nice if there was another another use for this gel, but unfortunately, it isn't. Okay, so let's maintain dignity and just get used to putting things back home is absolutely fine.

Okay, and we're going to get that.

Okay, let's go and have a chat. So, apparently, Susie, because she 10 years younger, 3041 Cd 52. Very similar body mass index. So that's great. But it premenopausal, only just got to the end of the platter, which comes after peak bone mass. So you've not yet on that downward slide. That's getting into Paramount, who was the only risk factor for you in the last 10 years? Probably actually four reduction, then how was the event? You lose about 5% of your bone density during pregnancy? Because parasite that is your baby, subsequent episode. But would you put it back on very, very quickly. If you don't normally, it comes back on very quickly. So for most women, it isn't a big issue that there are some conditions in pregnancy. So there's reason osteoporosis and break pregnancy, you can get osteoporosis in the future with that, and that's for that particular conditions. So looking at your let's look at your femur first. So here's your femur. Now, it literally Emily just below that that green zone. Okay, and this is what we'd expect

because the body mass index, so your T score minus 1.1, if you're called a T score compares you to the normal healthy pressure of so that is 1.1 standard deviations below the average, which is about just over 10% below the average. And that's what you'd expect for a nicer person like you and your Zed score that compares you to the other people your age. Now this middle line here, this black line here. That's what's called a modal value for the bone density according to age mode is slightly different from me, but in the north population are very close. motors just haven't been most popular value in that so that that spread. So minus point eight is about 8%, below average funeral age, which is what we would expect, again, giving you a built etc. So, osteopenia, once more, so we can see exactly where we're travelling because with Susy was pretty much the same low risk on the fraks of a fracture, but the prediction here, you're only just over 40. And Frank's runs from 40 to 90. So actually, these very end ages, it is less predictable. And so we'll find out from your area. So there's your fragility score nicely in the green, you're going to load fragility scores, so you've got well made bones, they're very tough, which is fine, you'd be doing on your xcite, which is good. And then you're gonna have an r three as well, because by definition, that's what it is using. So effectively, what this is saying is you've got a similar fracture trajectory, to Susie. But there's lots of things you can do to change that. And so and knowing about it, and particularly actually, when you come up to metaphors, because one of the things about the metaphors is if you know ahead of metaphors, you've still got plenty of history in the system. So you can do lots and lots to improve your bone health. So, so quite similar reports, which is understandable. But this is this is nice, it's always very nice to see four green vertebra. And that says, your normal variant, so your T score minus point x. So this is the point about where the T score is the cutoff is minus one between normal bone and austere osteopenia uses minus point A to Zed score minus point five. So five, simple average. So your final score is slightly better than your than your femoral score. And now, of course, what this means is that if you get down or fracks calculation, that stays the same, because it's still still low, but you're here's your fragility school nicely in the green. And that means that when we put the two together, you've been on one, so no one means you have less than 5% chance of a major osteoporotic fracture in the next five years, because you've got normal bone density, and normal bone toughness, which is great. So that's why one of the differences, Steven, between this and rems is that Dexter, so this index is that texture can't do this. Even with a bachelor in school, they don't have yet the the information to be able to put together a composite score to give you a better fracture prediction that it's coming. There's no doubt about

Steven Bruce
it. But it's only it's only pointed. Because if this can do it without any ionising radiation, then surely this is a better option. And it's better from the patient's point of view. Because as you said, this point of care, it's portable, it's smaller prism is cheaper. The next option

is actually funny enough is about the same. Yeah, they are. But actually, well, this is not the dexa itself. So you can buy an X machine for 40,000 pounds, and this costs about 4000 pounds with a software upgrade. That's fine. The difference is that I can that's all I'm gonna spend on this apart from some disposables. Whereas if I want a dex machine, that's the beginning of it. Now I'm gonna have a three phase source, I've got an LED line room, I've got to have a specialist technician I've got then had to have a radiologist or radiographer to do the post processing, etc. Whereas this is just me. And I'm so this is your right, this is cheaper, because it's pointed care to although the investment, initial investment just up front cost is just about the same as the machine. All the old costs are not not there. So that's fine. So it is it is very much, much cheaper. Well, actually, that's good. it's cost effective.

Steven Bruce
There will be competing interests in this room, there will be existing organisations, you've got debt, so we won't want to change rate there will be manufacturers who want to keep sending them send it which is likely to win the spectrum.

I think patients get when and that is that their patients will vote with their feet. Because people have recognised and organisations such as the Royal osteoporosis society these national osteoporosis federal Federation, they will recognise that Texas has its limitations. There's no doubt about it Texas very much 1990s technology is kind of come to the end of its it's a it's not an it's not an end of its life by any means. But it's the end of its development. It can't go any further. Whereas this can go a lot further. This isn't enough. So this is the new kid on the block and it's just beginning and in 10 years time, then when there are 10s of thousands of rams machines or Under this, hundreds of thousands of deaths, machines around the world will begin to see that heads and battle. I think that none of the decks manufacturers are worried about this right now. Because they know that in the time that they're going to be executives is not going to get enough traction, the market

Steven Bruce
only manufacturers another 101. So at the moment, you can't comment on inter platform liability. So it is

it is the invention and is the IP of accurate

Steven Bruce
recording? Do you think about that? I mean, in terms of interpreting the pictures, and all the stuff that Nick said, I mean, if that all makes sense as encouraging or otherwise to

suddenly, or is it something but

Steven Bruce
what she was probably one step because as soon as someone says, Well, you know, your little dog, and Susie was quite close to the road, it was only 35% fracture, oh, gosh, but then they turned around, he said, 95% chance of not getting furniture.

So yeah, this, this bias definitely helps. But it's just certainly something to think about. And I've always sort of said, I need vitamin D, I'm outside all the time. But now you're just like, Okay, let's go and get some vitamin D.

Steven Bruce
Well, you need to watch the show we have we're going to visit the special assignment Billings, I think it was because I'm sure in this country after about September, you don't get even if you're outside naked. It's not efficient, as long as you well then you don't

Mindy's by taking orally, because you because it doesn't

Steven Bruce
extend into somebody's mouth.

If there is no, there's not enough sunshine outside after September, we're now into that zone where more than 30% of the days, you won't actually see more than 20% of sunlight. And even though you only have to have sunlight on the head on the on the arms for 20 minutes in a day. We're just not getting that. And of course, by the time it gets to November, December, cloudy, rain, cold, etc. And we just don't get it. So at the very least, recommendations tape has made decent progress from September through to march. My recommendation I think government does for this is actually that everybody should take it year round. Realistically, whether you're in Australia at home, you'll be much more outdoors and much more exposed.

Yeah, funnily enough. So like, my parents are both on vitamin D supplements. Because although Yes, there's a lot more sun, as always in an office runs outside all the time. But your talk for me on a flat?

Yes, say. So that that was that was interesting in terms of public health in Australia, because in the old days before myeloma and the other skin cancers were really recognised as being a public health issue they are, then there was very little in the way of impair bone health. But as soon as the six locks that then sort of came on, then it was you start to see that. So it became very much more more like that New Zealand is through that for the south, they just didn't have as much sun as Australia. So yeah, it is interesting how you again, this trade off between one thing and another, isn't it? So there we are

Steven Bruce
actually recording the show with some very, very interesting. And we had a question from Robert. And we said, How close is this to becoming mainstream. So I think we really just,

this is an extreme it's available. paul stevens is the UK distributor UK and Ireland distributor. People can contact him and they can buy arrange machine and get on they can do the training, you need to go do the training. Now in the world of COVID. Whether that's when you go down to the heel of Italy, and do it in Lecce, or whether you can do it locally in the UK. But actually you need to have the understanding of how it works. What you're trying to do, you've got to do at least 20 scans under the supervision of someone who can train me to make sure that you can actually do it anatomically correctly. I then when I first started in 2018, I said okay, we've had a freebie August, anybody coming through the door in August, gets a free scan, because that's my training route. And I do 120 scans in that time. And that was what that's what I needed. Because that I got right on that learning curve. Well it turns into September 2018. I've done 120 scans, and I was there unable to do it. reproducibly so you've got to do a lot of training to do it right. If you're an osteopath, you can do it if you're a physiotherapist if you're a doctor, whatever, you do not need to have specialist medical training to do this. You absolutely absolutely.

Steven Bruce
And Rob also was having me machines around the UK. Yes. Okay. Robin says the usual question I mean, let's face let's assume that we have a patient who comes to us for whatever

reason and they are in our estimation vulnerable and they think that we think they should be scammed. How do we how do we point them towards someone with a random scanner

and well, they can begin they can agree my secretary up my sector is number that's fine, but they might not want to try What about England? No. Okay, so I do clinics the clinic furthest north of Jersey Bradford, so I do clinics in Bradford Lincoln, Huntington, Coventry. Daventry only going south down to Winchester South that Culebra associates, I travel so I take my clinic. So what will happen is you'll find there'll be increasing numbers of people springing up with brands machines around the place and because it's a point of care device, they will be able to their preferred clinic so I can go on the Worcester warriors. They come to see me because Brittany used to do sports medicine with that, but I went down I scan all of the Worcester County Cricket players once or one Sunday apiece and we took it to them and there was one of them and we scanned all those

Steven Bruce
people you'd come to me you got a new website for some new

Austria Austria scan uk.com

Steven Bruce
Oscar Oscar system in the UK. Yeah, exactly. When

it's all it's all there and the various clinics are all there. So at the moment, of course we have COVID we were not doing stuff because people are concerned because of the issues with COVID and do stuff at my clinic in Scranton here in Northamptonshire, which is fine, but he's not the same as this you know, with with essentially PP you know, bits and pieces as needed. So yeah, it's a nuisance, but hopefully next year we'll get back on track, but it'll get back to as well.

Steven Bruce
Okay. One question before we move on to no because me sitting there very patiently waiting tournament this. Someone's asked, given that we're all trying to diversify or reinvent ourselves. How difficult is it to train on this? And he said, anyone can do it chiropractors, osteopaths, physios, but is it,

the audience we've got tonight are particularly able to train on this because they've got very good anatomical knowledge. So if you've got really good anatomical knowledge of the hip and the spine, and particularly spine when you've got spinal deformity, so one of the things that dexa really struggles with is if you've got curved spine, because you've got scoliosis, or if you've got spondylosis, or you've got some sort of spurs and bone coming out of the raspberry Texas really inaccurate when that when it's faced with that this is, but if I got a woman who's got a spine that curves, and I can see that I can adapt to that. And the nice thing about being an osteopath or a physiotherapist or a doctor who's got this knowledge, he's actually you can see that you can predict it. So if necessary, you might think, okay, when I look at that person, their shoulders are slightly out, let's have a quick look at their back. Are they gonna lean forward test? Have they got scoliosis? Yeah, I know if I because I know I've got to attack them. So that I think an osteopath is actually in a perfect position, to train to use this to actually then deploy this

technology and to offer down health assessments. But I would I would, I would, I would warn. And that is that if you are going to do that, then you're not going to get if you like a retail experience where somebody comes along and says, okay, what's my T score, they would want that. When we first started, we thought that might be the case. But actually it wasn't. So I had to ramp up with my medical, very knowledge. And I now have a huge archive of material that I've been through, obviously, absorb. So we could discuss all this stuff. So all of this doctrine bits and pieces, all of the stuff on metaphors, all that I very quickly had to learn a lot of that, or refresh my memory from years gone by. So if you guys do this, be prepared to put in a lot of hard academic work as well, to really understand bonell, foam metabolism, metaphors, what makes certain women have certain bone densities and bone toughness is and how to explain that and be a really good I think being a good communicator is actually very important as well. So so there's lots of things you need to do is to it. However, that shouldn't be a barrier. And I very much encourage anybody in the audience who, who's interested is got an interest in bone health. And he wants to do this. I mean, if they if they want to look at it, look on the website, but I will put the echo on videos. There is actually a there's a webinar that we did to the accurate light of God, a rems Academy on YouTube. So you look at that there are some two webinars that go and get familiar with it, and see if it's for you. Sure.

Steven Bruce
And you said the machine costs around 40 K, how much does training cost?

That's it. That's what I'm saying. So the bright the price of buying machine is you can pay for your airfare if you go to lecture and pay for your hotel. But the actual training is part of that.

Steven Bruce
So somebody said somebody said that I think you're using a bounce back looking for this. Yeah, why not go through the reasonable thing? totally reasonable,

man. Yeah, absolutely. I think that would be a very good use of this.

Steven Bruce
Okay, should we move on to fishing? Yeah,

that's right. Let me get your

Get your details up.

Here we go. new patient. This Harris, there we go. We are perfect. Okay. Now, no matter pause, which is fine.

85 What was it? I mean, what was the height? 171 7020 foot for one, perfect Britain. Okay. And so to me, you're only 3033 33 because you're less than 40 we didn't have to get through the frack. So he cannot even predict because that can only predict the risk of fractures from age of

40 to 90. So we don't have to worry about that. So say, well, we'll skip fracks which is fine. Would you like to come and lay yourself flatten your back on the couch? And we'll get this done.

Is there anybody in your family who's had a history of fractures or osteoporosis? My mother has severe austerity process. How old is she? She is. Rule 666 66 actually fractured. And now she has, Oh, she possibly has. Okay. But like reps, you're having say they haven't paid anything. So how does she How does she know that she's

oblivious to product?

She's had a dexa scan? Obviously, I would imagine they would have wanted to do that. Because they normally don't do that. I mean, certainly, if she locally Northamptonshire

Yes. Because

normally Northamptonshire, they wouldn't do a dexa scan until you actually had a fracture.

If she got a particular

issue with very low body mass index she had, okay, so that might be its own.

Right?

To protect you with that. So can I get two properties down to just about the knees, which is fine.

That's good. So legs apart, shoulder width, left leg turned out. That's lovely, thank you. And for is protected from the evil jelly. So we put that just about what you have to do really, is to get this just above the pelvic room there. Can we get you to put your hand just like that perfect. Because that way that we get full access to the to cancer?

Steven Bruce
No, very good question for you. With your other hand. This is quite detailed. Somebody has said what die Have you got on your hair because it's gorgeous.

I can tell you that the make of it.

Steven Bruce
There's always someone else.

Okay, so let's get going right now. So there's there's really hit me

up very nicely. So

as with Suzy as Brooke, you can get 100 and 60 million bounces of sound of your lab table. So that the sound is not knocking too hard. So it's not worth doing any damage to it and actually that the rent is is not able to damage the body tissues at all. In the same way that ultrasound is completely benign then there's there's no risk of any injury or any damage at all. So and very shortly we'll have an answer for your let him do any sport.

I do the occasional jogging. Okay.

When you were younger, teen, early 20s did you come up to do much then we're not very much did now.

So it's quite important when I see quite a lot of elite sports people. And it's always a it's always a balance between how much impact they do, and then what they're eating and what their body mass index is, and, and putting that all together. So I've seen recently a rash of teenage girls and boys who've had low bone density, and they've caught with bone stress injuries, and so they're actually injured their backs that you've got broken bones because they've got low bone, and that's because they are underweight, low vitamin D, avoiding milk. So you know dietary things in teenagers these days does appear to be a really really big aspect of what they get. Burn. And of course, the most important years are up to the age of 30. Because up to peak bone mass, you've got to build your bone. If you don't build your bone, you don't get to peak bone mass. Mass is a plateau and then down after that, yeah,

very much like that.

Steven Bruce
So you're across well into the green zone here, and

we've got a lovely bone density in your head, absolutely lovely, which is fine, which is what we'd expect to get. So we expect the same in your spine.

And just get that sorted out. And that's fine. And then we skip that. It's good. Okay, let's detail that's fine.

One of the

one of the things that in our freebie, August. So let's get to that there. So if you want to equal investigators, just another form, that's fine. One of the things about the freebie August was the frustration of the scans, and because yeah, that was, what, two minutes, that's fine. But when you're when you're struggling, first time around and you're learning it is important not to get frustrated, it's like learning to try to ride a bicycle. Once you've got it, then it's fine. It's easy. But trying to avoid if anybody is interested in becoming a ram specialist, avoiding the transmission of frustration to the actual patient is quite interesting.

Steven Bruce
It is important. Someone's always think what a patient would expect to pay for a rims scan.

For me, first time around hundred 50 pounds. So they get a half an hour consultation to get a REM scan and we get through it dodgy stuff, and then lyric size and the risk practice cetera. So which is around about two thirds of what my normal consultation fee would be if we were just doing a spinal consult. And, and it varies, I mean, there are people out there who will be doing just a basic ram scan without any of the ancillary staff or they might be charging 60 or 70 pounds. So and so it does vary, but mine, I hope is a reasonably good value added consult. Okay, so there's your aorta down there, you can see that passing away nicely. And we just change the focus there, that's fine. So we're gonna get to. Yeah, so you see a beautiful picture of your spine there. Okay, and you see, the disc is this thing here is more prominent than the bones. And then if that's all for that sort of three,

sliding

until t now, what are we talking about spinal shake early, you've got a tiny tiny curve in your spine, which is, which is really, really common in girls. Okay, okay. So if you look at all girls and population, then that 16% have some sort of minor, spinal curvature. And in boys, it's about 3%. So we expect to see it quite frequently. But there's a tiny, it could be the way you're lying, it could be just the fact that you've got a little curvature, it's fine. But the nice thing about that, of course, is that because I'm used to seeing it, I can then modify the position of my probe. Keeping that a water nicely in shape. You can see now the problem aghast you see that little shadow coming down like a waterfall in the middle of the picture that grades is it is causing the the now we're back on to nice clear bone again, that that nice, shiny white stuff, and that there was a gas bubble just to the right, it's now disappeared off to the right hand side. So cell three, which is the most prominent of the lumbar vertebrae, when you're in the line down session, and then there's all four

CD, a also just diving off into its bifurcation going into the idea of arteries.

Good. Okay. Well, let's see what we've got right now. There's no reason at all why you shouldn't have for beaver springs. And see what you think, as usual.

Steven Bruce
Sorry, I just had a question come in asking if you could point toward as you're looking at an image of course now the image has disappeared. That's a bit tricky. You were mentioning as you're going through that isn't Yeah.

So what I'll do actually is

I'm locked into time,

Steven Bruce
we've got about 15 minutes.

Okay? I can I can fire up a presentation that I've got on the system that can actually show up because I've got a slide that shows you exactly what you're looking at. So I can do that. That's fine. So just look at namespaces results are sorted out, and because if yours is all green, we've done all the talking. You're brilliant. That's it, that's fine. So but for you, actually, this is really important, because for you going forward, knowing that you've got good bone density now gives you our hope. Phenomenal. Bruce, Sarah, I need to keep hyperintensity cache because I don't want my mother. Okay. Yeah. Lovely. Okay, that's fine. Now, what do you promise me something? Don't show your mom and say and do a bit of bodensee shaming. That would be that would be just cruel and nasty. For that would. Okay, good. Okay, let's teach our youth and then we'll put these up on the screen so they can see them, which is fine. But

Steven Bruce
Nick, I have a little tear. I mean, Lamy, you said you have good bone density? Yeah. Do you think that is in any way related to the colour of a hair? I've been asked.

Sorry, I couldn't possibly

comment. Okay.

Steven Bruce
Moving on said how does the resolution compare to diagnostic

Commission's to diagnose what

Steven Bruce
or versus diagnostic machines I think it means.

Not exactly it means bimodal. This is a put this is a perfect fit for the mode of sound in one format. And you can actually get there's an added module that you can buy for maker life that allows you just to run it as a as a diagnostic ultrasound machine and do all the normal ups and

stuff. So it's been exactly the same resolution as a normal beam a lockdown diagnostic machine. Okay, but you have to have, you have to turn it into into that mode. Right. So

Steven Bruce
civil has often I kind of feel that this is exactly what you've been saying. Figure three stands. That apart from the computational bells and whistles are words and machines capable of is there a difference in sensitive between rems and dexa. At tissue level? He means bone tissue quality apart from the degree of mineralization.

Yeah, that's differences between most dexa scans do not have a fertility score. So for those that don't measure toughness, and that's at least half of the reason for people's fracture. So yeah, is the answer. It wins hands down over most Texas if Texas has got trabecular bone score enabled and nobody know what how many units are in the country the handful that do they can they can give you the same diagnosis here. But most most of the time if you

Steven Bruce
have a clinic in South Dorset,

South Dorset no but one of Winchester

Steven Bruce
so Winchester Melanson about South Dorset but

haven't got one yet if she wants to set up a clinic yourself Dorset so the one I did a thornborough was with an osteopath down there a lovely lady, Rena piette. And and so I've done it in osteopath clinics, and so yeah, very happy. And then she wants to talk to Sarah village, who is our sales and marketing director through the websites and wants to run one, then we can talk about that. Now they are perfectly greenbone. Now your T score because you are the three you're allowed to have a T score, if you were if you were 29. You wouldn't have a T score because you below 30, which is our cutoff, but your T C's t score is plus point five. So you are 5% better than the average 30 year old lady. And your Zed score is 20 put six which means you're 6% better than other, the average 33 year old. Okay? We know that there's no fracks calculation because you're below the age of 40. Lovely, very low fragility score. So you've got really tough bones even being on here than what your TV's doing.

Steven Bruce
Well, hopefully the viewers are seeing this in full screen here.

So to see we know one day or less than 1% chance of a hip fracture due to osteoporosis next five years, basically you've got there is virtually no chance. Okay? So that's that's that's lovely, which is great. What we haven't talked about is very much is projection and and CC and what Stephen pushed up for you was If your result is here somewhere, not so far away from the red sand, what can you do about it? Because if you dive into the red zone, does that mean that you need to start taking allergenic acid and other bits and pieces? Well, not necessarily. Because if you are osteoporotic, you've still got all of the options to do the weight bearing exercise and to mix and match and make sure that all of your was getting into you is actually really optimised. If

we look at name is here, let's follow the trend line down, she's right on trend here for a spine. So naming your spine is absolutely, you know, average for a 30 year old is average for people your age, foot one is average. But your spine is not going to become austere project, if you carry on as you are without changing things. And that includes the effects of metaphors until you're about 80. So actually, by the time you're 85, if you're lonely, just be that you might be there. If you were, for instance, to have something that alters the negative effects of menopause and there are drugs rather can do that. And in time, we probably will be able to alter that you'll probably find your trajectory is actually good to be here. So you won't become lost your project. But there are some There are also projections that I've made that if we can improve bone health, I'll tell you what I didn't do I didn't tell you what your I don't know what your your toughness is gonna be. It's gonna be brilliant. If we can improve There you go. There's your toughness. Yep, you're green all the way through

having a good day.

And Johnson Johnson a fracture major fracture less than 5%, which is Yeah, it's gonna be it's gonna be really tiny. So, so you can go and take your mom that you haven't inherited, whatever it was that this caused her to have osteoporosis, which is which is lovely for you, which is great. Okay. And actually, you'll find it's lovely for her. Because one thing that parents don't wants to do is to to pass on to their children and frailties, they might have, we always want our children obviously, to be a lot better than we are so.

So just just just have a quick look and see whether I can get time.

Steven Bruce
Hopefully you can multitask David's stimming athletic population with a stress reaction or stress fracture, how often would you want to review their bone density to change?

If I'm if I'm monitoring it? Well, I'll show you. I'll show you that because that's exactly what this if he looks at the way he looks at the webinar on the Rams Academy, which is what this this talk is here. What I talked about there is what's called the the mechanic said yes, so the mechanic staff tells you how burn responds to load. And and if the boat is the bone, basically if you load your bone physiologically then you stay at the same degree of bone toughness and by density if you increase the loading, so you do some more sport etc, you will then improve that but if you overload it, that's when you get a stress fracture. Now, when we look at the this is some stuff from left breathless, Norway, Nick Pierce and Castleford label produced in 2018 is a fast bowlers looked at by the ECB group. And what they showed was this as using dexa, that the bone density before a bone stress injury was up here, plus 2.8, was a very high level of bone density. As soon as they got a bone stress injury and then got shut down, it plummeted down to 1.7. Now this is a big enough gap that dexa can manage to measure because dex is not very good at measuring small gaps, roads, roads is better. And then what they did was that they did sequential Dexter's going through till he got them to reload them as they went through the shutdown, they came back up and they go, now we can use wrench, you can have a different scan every week. And you could use that then to guide your rehabilitation from an injury. And some of the be the worst rugby players that I've seen that, you know, in the past, we've done some of that we've actually done some sequential scans. So we definitely can do that you can

do every week, every day, you could do 10 times a day if you wanted to, because it's ultrasounds and it's got no damaging effect whatsoever. So the reality of it is we can measure bone density, the resolution of rams is maybe one to 2%. So we need to see a change at once 2% before you know there has been a change. So for instance here you can see that that if it's dropped from minus four plus 2.8, down to 1.7. That's a huge change. We will see that very easy on randoms and then maybe scan them every month as they're going through their 16 At MC rehab programme for devoted stress injury, yeah, so let me just put up the, the, the pictures, because you're the viewer who was asking about what is it we're looking at.

So this is this is

Steven Bruce
very much that

so that there you see the picture of the femur, and the blue area is the acquisition. So all that is here, that's the neck of femur that X ray. And when we're looking at the spine, the little bits of white stuff we're looking at, this is the front of the virtual body as well one through 12 four. So what we're what we're looking at these are the anatomical regions, what are called the regions of interest. And then this is the frequency graph showing exactly what the opposite has done with its balance your bone, and that big peak there, that then equates to the front of the vertebral body. And then the opposite penetrates for depth around about one half to two centimetres. So you take a nice big triangular chunk out of the front of the vertebra. And then that's our region of interest that then gets turned into our frequency curve here. And that gets matched against the current library and that then gives you all your results. So so that's on the rems Academy, YouTube channel of that webinar. So if you're interested go to that. What's your advice, a 40 Minute Webinar

gave you a good idea.

Steven Bruce
quick couple of questions before we fix because this question ages ago, actually, you have anything you could say quickly about the risk factors and mechanisms of causation but NPS bond and osteoporosis.

Yeah, the the problem that our client is not licenced is it traditionally was very much associated with with osteoporosis because of the abnormal loading. Because the the problem thankfully spondylitis is that you've got flowing us to fights effectively since there's no fights around the outside of the desk. And so it's a very altered pattern of loading through the vertebral bodies. And that's why they became osteoporotic. In recent years with disease modifying drugs, that's changed quite a lot. And I think realistically, if you've got somebody with a new diagnosis of ankylosing spondylitis, or another spondyloarthropathy, good disease modifying early diagnosis, good disease, modifying drugs, and then make sure the chemo reactive should minimise the risk for osteoporosis.

Steven Bruce
Greene said something about electronic assets. And we've been asked by Lindsey whether it's triggered the increased bone density but increased fragility. Okay, so

allophonic case it doesn't increase bone density, what it does, it stabilises bone density because it turns off the osteoclastic activity or reduces it so considerably. So you still got osteoblastic activity, but it actually is absolutely right. And that is that your fragilities is decreased because you've got this unopposed osteoblastic activity that produces immature bone because the osteoclast to be turned off, you don't get remodelling, so you don't get strong bone and that what you have to have is remodelling. And so this is why you get for instance, osteonecrosis of the jaw. You can get some temporomandibular joint problems and run mandible, and also the atypical fractures of the femur. These are failures of remodelling. So it is a an increase in fragility, without an improvement in bone density. So they stabilise pregnancy, without it. Now, this thing goes to what we've said earlier, and what all three of you have got. And that is you've actually got great fragility scores. So if we come back eight months before the upgrade on this machine, I couldn't have told you what your fragility scores were all that said to you, as soon as he was that would let you know, you're fairly close to being osteoporotic, at some point in the future we need to do something about that actually won't now there is that you've got very good tough bone, and actually, I will have a completely different conversation with you. And then of course, you're the same given name. So So I think what we've now got is a better way to look at and for Cassie and all the other bisphosphonates and how they work and what they really do. And do they actually then have the effects on fracture risk that people have been looking for for all these years.

Steven Bruce
Nick, thank you very much.

Welcome. Robin, you

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asked a question, which you told me is a genuine question about the difference between mountain biking, road biking, and we're going to talk about that now because we've run out of time, but I lost Nick in the public realm, and I'll send the answer to a friendly ladies, thank you for giving me your time. Thank you enjoyed and benefited from the experience. And I wish that television will stop flashing. technology's wonderful. We're fresh back in the studio is over there. So thanks again and we will get your your reports to Unicode. So you can share it with the people in your study.

What I'll do is if you can just give me your email addresses and I will send you the reports and that'd be fine. So if you're

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brilliant that's been fantastic hope you've enjoyed the show this evening and you've got some benefit from it not least in how you can advise and communicate with your own patients about the sort of scans they should be getting and the nature of the risks of osteoporosis menopause and and so on presents to them all the time for this evening. Thank you for your questions if you ask them. So tomorrow we're looking at his pitch dysplasia and perthes disease on Monday we're looking at vestibular rehabilitation. Next Wednesday, we've got a case based discussion and on Thursday we have the lovely Angie Gopal giving us a lesson on yoga for chronic stress. So lots more CPD coming your way from the Academy, if you've enjoyed it this evening, but that's it. Goodnight