Transcript

K Laser - Stephen Barabas - Ref217

Steven Bruce
Good afternoon. Welcome to the Academy of Physical Medicine, we have got a great show for you an extra show in our calendar, this lunchtime still counts as 45 minutes of learning with others CPD. A few things. Before we start, I'm going to be talking to Steven Barabas, about laser therapy. Now he is a representative of the key laser company. But this is not specifically about their product, I suspect we'll learn just how good that product is. But this is this reflects laser therapy generally. And there's a lot of technology behind it and quite a bit of science behind it. And I've actually got an 81 slide deck, hidden away somewhere in the in the gallery, which we aren't going to be showing you we're going to show you a few slides from that gallery from that deck. But what I will do is I'll give you a handout afterwards. So we'll be bringing the slides up on the screen next to me, Stephen will be talking about all sorts of technical stuff to do with lasers. And afterwards we'll have one of those as a PDF handout. So don't get too worried if you can't follow everything that's on the slides right at this stage. Why are we doing this? Well, we're doing it for a number of reasons. First of all, laser therapy has come on in leaps and bounds over the last few years. And in fact, I don't know whether it was a year ago or somewhere about them. But we had Steven and one of his colleagues on the show to talk about laser therapy and even since Then laser therapy has changed. And he hasn't told me how yet, but he's going to in a while, we were looking at buying lasers from my own clinic, we're still looking at buying them for the clinic. And so, you know, what we're very keen to do is explain why they're useful as an adjunct to our physical therapy, how you might use them in your own practice, if you wanted to get your own laser equipment, or even how you might access laser therapy through other sources, if you don't actually want to invest in that kit, in your own practice for the time being. So that's kind of set the scene for what we're going to be doing today. Let me introduce Steven Steven, you've got all sorts of fancy titles on the website, and he's a man you're a fellow of laser therapy is something

Stephen Barabas
Oh, there is a British medical laser association. So yeah, I'm involved with them, which represents the whole of the medical laser industry in this country. And your background is what you're in. I'm actually a veterinarian. So I graduated in Glasgow, I all the rest of the family are doctors. But yeah, I went on the veterinary route. And I was looking for technologies, which would help me in treating osteoarthritis. I mean, I used to be the tech director of a big pharmaceutical MSD in the USA. But even though I still use nonsteroidals, that's only part of what I'd like to offer. And so on the human side, and on the veterinary side, we do much more of a multimodal way of treating pain management and Ostia, still in clinic. I still, for my sins do one and two weekends. Ryan, which keeps me real. Yeah, which is really

important isn't incredibly important. Very often we have when we're talking about things may be similar to laser, when we have people come in, you're either on the technical side, or they're on the clinical side, but you've got a lot of both. So I think it's important because what I where I'm sitting here today was not something pre planned it kind of like the rest of life, it sort of flowed into it. So

Steven Bruce
I thought you're talking about this broadcast, and we planned this broadcast, but they told you last week, you were coming into the studio.

Stephen Barabas
That's true. That was but you know, in regards of just my general philosophy on how I'd like patients treated, it doesn't matter whether that's a human or an animal. You know, we're lucky to be in the UK, we're lucky to have that desire to go and improve human health and animal health. And therefore, whether it's a pain medicine, or it's rehab, post sports injuries in there, they overlap.

Steven Bruce
Well, I'm impressed that you're wearing scrubs for the interview, because we have got a model lined up for you to demonstrate the equipment, and I suspect he's getting quite nervous. But why is he wearing scrubs? What's going to happen in

Stephen Barabas
here? Yeah, there's no operations today.

Steven Bruce
Okay, let's get on to the lasers. Laser has been around for a very long time. And lots and lots of people have got lasers or have looked at buying lasers. And there's a whole spectrum of prices and whatever. So first of all, let's start with the technology. What, what and how does laser actually do?

Stephen Barabas
Well, first of all, thank you for inviting me, because unlike pharmaceuticals, it's a very poorly regulated market, any any medical equipment has our lack of scrutiny in regards, but you could all you have to prove a safety. So I think it is difficult for your audience today. You know, I hope they enjoy the lecture. But it's important that they do their own scrutiny of what they're spending their hard earned cash on. And also making sure that what they're buying is actually going to really benefit their patients and not just ticking a box. And that's an important aspect

Steven Bruce
about and one of the things that I wanted to get out of this discussion really is obviously a look at what what the equipment itself looks like, because people possibly don't know just how bulky or mobile or portable it is. But also to give them the criteria by which they might decide to buy K laser or they might decide to buy some other class three, a three B class four lasers because all the all these terms have bounced around. So it's very hard for us, mere osteopaths and chiropractors, and so on to keep track of what it actually means. Sure, actually, I'm probably speaking very personally from there when I say it's hard to keep track of I'm sure that you have a perfect idea of what all these things mean.

Stephen Barabas

I mean, we could use some slides as an illustration, it might help the audience about so if we went to slide two, first off, this might give them an idea about how it operates. So you know, the word laser stands for something. It stands for light amplification, stimulation, emission, radiation, radiation in this current climate with Putin doesn't sound very good. But actually, there's a lot of safe radiation out there as well. And this is what we're using in laser therapy. The critical world is photo bio stimulation. And it's the use of these wavelengths of light to actually biochemically change things within the cellular and physiological structure.

Steven Bruce
So therapeutic laser has always worked regardless, regardless of

Stephen Barabas
that. Since then, there's been lots of different words bandied around to talk about low level laser therapy and high intensity laser therapy, but the truth of the matter what you want is a laser that is able to go and change things biologically for the better in the body system. And do it in a timeframe that fits in with an osteopath, Cairo physios timescale massage therapist. And that's a critical thing, it's, you know, within our own laser, we have both low level and high intensity lasers. And that's because you don't need a high intensity for the skin. But in order to do things in a time efficient basis, you need a high intensity laser, in order to penetrate deep into the tissues and do it biologically.

Steven Bruce
Just pick up on them and not pick you up and just go back a little bit. You've said earlier on that medical equipment isn't well regulated, other than for safety. And you've just mentioned that osteo is and Cairo's and physios and massage therapists can use laser technology, when they come to get insurance for it, are there any hurdles that people have to jump through to prove their competence with the therapy,

Stephen Barabas
I mean, we work very closely with the insurance companies, not all insurance companies will cover it. But the majority do. And as long as they have been got all the training certificates, and they've got the proof that the actual company has not just dumped a laser with them, but gone through the whole process. And there is a thing called the core of knowledge, which they need to set. And if they've proven that, and they've got the certification on their specific machines that they're bought, then insurance companies should be able to go and cover

Steven Bruce
them. Right. Okay, sorry to interrupt. No, no, it's important as therapists.

Stephen Barabas
So if we go to slide 18, first, second, sorry, then that will explain a little bit about what's the critical aspect in regards to lasers themselves.

Steven Bruce
I think he's having to bounce through the numbers individually until he gets to slide 80. Okay, it'll come up,

Stephen Barabas
if we go to was slide 18. Here, what that's trying to show you is the actual way we what you're showing is the molecules, okay, so here in this, this one here, these are the critical molecules. So whatever laser you're looking at, they need to have wavelengths that are

peak absorptions of these areas. So, you know, we all think about green plants, and chlorophyll and plants look green, because of the absorption of sunlight. Well, these molecules all have a colour, whether they're in the infrared in regards to water, which water has a colour in the infrared, or copper in cytochrome, Siemian mitochondria, or iron in haemoglobin, and obviously we know the colour of melanin in our skin and our hair. But each of those has the absorptive capacity. And they're all titled The single chromophores and their light absorbing molecules. And when they absorbs that photon of energy from light, then they can create and replicate what the body should be doing, whether it's an osteoarthritic joint, or its healing skin, or whether it's a tendon injury, and you put in motion aspects of what the body should be doing, and make it more efficient. And that's what that's what the energy of photons is doing. absorbed by these different molecules in the body.

Steven Bruce
And can you target which ones you wanted to,

Stephen Barabas
you can get by, but you know, if you look at what we're trying to do here, in in targeting water, the most common area where water is is actually in the circulation. So you can open up capillary beds, and that's really important for perfusion to heal. But it's also important to get away the waste products. And and if you're in an austere joint, it will reduce the inflammatory cytokines by just improving perfusion. But in doing that, it's then going to bring blood there. And you know, if you've got osteoarthritis, or you've got post surgery injury, you may not be very active. But we can trick the haemoglobin to dump oxygen there. So now you've got the nutrients, you've got the oxygen then. And now when we target cytochrome, C, we can raise the cell metabolism, whether that's a neuro site in your spine, or whether that's tenocyte in your Achilles tendon, or whether that's an osteoblast. And in doing that, then we can improve the functionality.

Steven Bruce
It doesn't mean you'd have to decide which of these you are targeting.

Stephen Barabas
Now we do it all in our laser, which covers all four wavelengths. areas, we, we would do that simultaneously at the same time. All of them working in unison. Okay.

Steven Bruce
Good. I think I understand that now. New Words for my vocabulary chromophore

Stephen Barabas
indeed, no problem. And if you if you look also at the previous slide, which is slide 15. And that kind of ties in in the whole aspect about it here. So, so what we're talking Sadly, in this strange world, we live radiation is a word that's coming up now, but we are what's called non ionising radiation. Okay, so we're in this visible, which is where the red light is for treating melanin in the skin, but also in the invisible which is in the infrared sector. And these, there are specific molecules you saw on the previous slide that we can then target and go and improve the cells. You know, cell metabolism as well as the physiology of the patient, what we're not as ionising radiation, which is on the far left, which is the X rays, the gamma rays and the UV, so we're not damaging tissues, we're not causing any issues in regards of the body itself. We're stimulating healthy healing processes.

Steven Bruce

So what is it with the men in black glasses that we have to wear when we're using this? Well, I

Stephen Barabas
think they're more on the ionising side of things. So we're not getting there today.

Steven Bruce
But we have to wear glasses when you use it,

Stephen Barabas
you do. Yeah, sorry, true. You do need to because we do not have a visualise change in our Iris. Because of we do not perceive infrared, unlike some of the animals in our, in our planet, and therefore the we block out the infrared, we still use, we can still visualise the red, which is around 660. And therefore we can see where we're aiming the laser. But we're not, we're blocking out the potentially damaging infrared, which our eyes won't be able to detect, therefore, we don't get an iris constriction,

Steven Bruce
right, okay, I understand. Okay.

Stephen Barabas
There are other aspects about lasers. So wavelengths is the most important aspect about it. And if we looked at slide 1212, is going to look at power. And you kind of talked about this earlier. So you are right, lasers have been around a long time, you know, I could have shown a slide of Einstein and his theories of lasers and the potential benefits and negative side of certain lasers,

Steven Bruce
you must be the first person ever to pass up a chance to put a picture of Einstein use it usually looking very dishevelled and saying something,

Stephen Barabas
if it's the only we only had 70 slides. So in regard to this, this is an American National Standards Institute. So that's why it's called NC. And it's what the whole world has adopted in regards of measuring powers of lasers. Okay. And, you know, from, you know, if I was in a lecture here, I'd be using my laser pointer. And obviously, that's not damaging, you can, it's a very, very low power, it's only up 2.4 micro watts, which is a tiny amount, which is laser printers and laser printers, you don't need goggles when you're doing your computer or anything else like that, or even looking at this TV screen. But when we get up to class three, B, that was the earliest sort of biological lasers, which were sort of developed in the 60s going up into the 1990s. And that, that that was deemed as safe in regards of what you could do, from a therapeutic point of view for patients. The downside was the amount of time it took to be able to do that. So you can do some excellent work in regards of acupuncture, using lasers and a glossary be even a class to sometimes could be used to utilise for that if that's what you're really interested in. But if you're trying to go and do deep, muscular skeletal tissues, and you're trying to do joints, and you're trying to do backs, especially then the Advent from about 1998 in Europe, and 2002 in America, allowed class four lasers to be deemed as safe for therapy. And that's the only registered legislation out there really,

Steven Bruce
when you say safe with the bunny ears It makes me think you don't believe it's safe

Stephen Barabas
Nope, I do believe it's safe. But it you know, that you know, a klaserie be laser can also be dangerous if you shine it in someone's eyes. So so safe is you know it all of these D used badly could cause some problems, especially in eyes. And therefore you know, whether it's a class three B or a class four, you still need goggles. We ourselves as a company have a deem that we only sell into the medical trained professions and the manual train professions because we want to make sure that they're using it legitimately and they're using it properly. And they understand both the disease and the way of using the laser to get the best results out of it.

Steven Bruce
These pictures at the bottom of course are showing that there is a broad broad range of what class for lasers actually include absolute shooting down aircraft etching steel or whatever that thing's doing. And then surgery cheering

Stephen Barabas
and then here's a Greek football star going and treating his inner groyne for problems so is the old poster boy Rafa Nadal. We do and I was very happy about the Australian Open Yeah. To see someone come back at 36 and defy the odds and win that and and he has very bad patellar tendon opposites. So not surprisingly, is I cannot build like an oxen, you know, good 30 years running around tennis courts does damage to you. But the fact that we can keep him ticking on with a good physio team means that actually you can still play at that level and you know, obviously limit the amount of playing time he does, but he's back playing at that level. So

Steven Bruce
that's a good sort of lead in to talk about what you can actually address with laser therapy. Yeah, so Okay, so we've got a tendinopathy.

Stephen Barabas
So as the first set, the second slide I was showing you in repeating the haemoglobin the mitochondria and the circulation, where you target that you can improve the overall aspects of tenocytes myocytes osteocytes. So I think that's the hardest things to people to judge because we're so used to pumping a pill, and it knocks out our receptors for a pain. But actually, we're doing a lot more than this, we're actually it's a bit more like an anabolic steroid. But legally, we're able to go and boost all of the tissues, right. And when you target over a certain area, that you still need the compliance that you'd use with a drug or with a manual therapy technique. But when you have the compliance and the right laser, then you can really improve the overall tissue functionality, physiology and the overall clinical results. And

Steven Bruce
I'm going to make a broad leap here, legal, not least because the there are no significant adverse side effects, which there are with anabolic anabolic steroids understood. So are there any other any adverse

Stephen Barabas
side effects, the side effects would be eyes, which you've alluded to already. And because you don't have a blink reflex, for infrared, you do need to wear glasses, as does the patient. And there are different distances away. So most people working within a clinic, the people

working in that room would need to wear goggles, it will be different distances to different lasers. But in regards of other aspects, we have got some data which we work with the Dental Association, where we've shown that you can safely use it post squamous cell carcinoma removal, which is quite a big leap of faith. Were you thinking about a bar stimulator, but we've done studies on 101 children with squamous cell carcinoma and not cause recrudescence of the cancer? I still would be a little worried about doing it directly over cancer. But some of your clinicians who are watching today, you know, if they are we know if there is inadvertently and osteosarcoma or five fibrosarcoma we're not going to cause that to go and get even more virulent or melanotic. Malignant sorry,

Steven Bruce
yeah, I will address some of these questions that are coming in. The first one is, this has come from a chap called James who hasn't given us His surname, but he's online, and he's sending his best wishes from Skiathos in Greece. And it maybe was taken by the big picture of the the football you showed a minute ago. Lawrence says I had an older 70s, patient of late who commented that she'd received laser on her neck for OAE. And she mentioned that her neck was sore for a while before she gained benefit. Is that normal? And how does it work on such deep structures?

Stephen Barabas
Yeah, I mean, illustrate that we can demo demonstrate it later. We could. Susie's gonna help us today. But I think can I show you to answer that question, dosage, and which is slide number 20. Right, because I think that will illustrate why it's important. Because different wavelengths will penetrate different depths, the best penetrating beams around the 800 around that area. And if you're, you're paying your, your sorry, your your clinicians who are watching today, we're only treating skin and they probably wouldn't be watching this thing. But most of them are dealing with deep pain and chronic pain, and some acute soft tissue injuries. And what this is showing is the dosage you need. And in order to go and get dosage, you need a lot of energy. And that's in the energy of photons. So you're taking light energy to it to chemical energy within the body system. And you can see that that actually is quite high level. So someone like that neck pain you're talking about, you either need a lot of time, or you need more power of the machine. It's those two compromises, hopefully you've got the right beams to start with. And those are the two differentials in regards to that.

Steven Bruce
When I think about dealing with chronic soft tissue injuries, very often I'm thinking well, I'm going to have to reinjure this in order to stimulate a healing process is laser doing any of that when

Stephen Barabas
your analogy there is more analogous to shockwave shockwave but also to manual therapy and indeed manual therapy where you're provoking a reaction to try and stimulate healing. I put a good therapeutic laser is doing a good cookery course, you putting all the ingredients in there and sort of stirring it up and hoping that you end up with a really nice cake at the end of it, you know, you you're creating an environment there that optimises healing. So sometimes if you've got chronic Achilles tendinopathy using shockwave or really deep massage therapy, to go and break up that scarring, and then using laser is a really good combination because that, you know, a good therapist, you know, requires quite a lot of you know, for a deep muscular skeletal requires quite a lot of force, similarly to shockwave in that respect, and this will help in regard to that of trying to put it back together so you're not just rescoring where you've just broken down some scarring.

Steven Bruce
Debbie has sent in an observation she's been using K laser for the past seven months. Amazing results with her chronic pain caseload which is which is nice to hear. And I'm sure I have to say this, I'm sure that other lasers are available. But there are, what we want to get out of this is how would we decide which is the appropriate one for clinic.

Stephen Barabas
And then we can go to slide number 21, which is just the one after this, I believe. And this is a critical thing. So we've searched shown the importance of wavelengths. So the wavelengths, hopefully, whatever laser you buy, they're able to penetrate deep enough. And they're able to go and target those key molecules in order to create that optimal environment. So really, it's down to you as a clinician thereafter. You even need a laser that has enough power that you can fit it in, in short bite size areas. And we're talking no more than five minutes for a neck treatment or a back treatment on a good laser. But you need enough, if you don't have that you need a lot more time because in order to get in order, that this isn't just some sort of bogus treatment that you're shining at someone in order to get that clinical effect. You need that combination to work in unison. So this is a given. And then hopefully, you've got enough energy there that you can fit this in with all the good things that are clinicians using already at this point in time.

Steven Bruce
So you talked about high intensity laser a little while ago, does that have the potential to cause damage, if it's such an intensity,

Stephen Barabas
if you if you stayed over a tissue for a long period of time, with a high intensity laser, you could potentially raise the temperature to cause damage to the tissues. You know, you know, for instance, our laser is in treating someone over dark skin. It recalibrates so it uses less 100, in order to make sure that you're not getting too much absorption at the skin level. So there's certain clever aspects that you can try and mitigate, to make it as safe as possible. But again, it's down to training and it's down to the education of the clinician using it properly as well.

Steven Bruce
Okay. Don't I remember you saying something about posting of this as well?

Stephen Barabas
Yeah, there is. That's a call that the oil of the good laser. So if you looked at slide 24. What slide 24 shows you is we've talked about wavelengths, we've talked about power. And the effect on how long the lasers used for this is the we're not talking the wavelengths, which is the sort of pulse this is like you and I annoyingly turning on and off a light switch. Okay, so it's a packets of photons that you're you're doing at any one point in time. And what this slide shows you is you've got four different cell lines. So you've got smooth muscle, you got leukocytes, you've got endothelial, which is a new blood vessel growth. And you've got bone cells are quite different types of cells there. Yes, this is petri dishes. And looking at our laser, if you find our laser at with a continuous wavelengths at all these different lines, you can see actually, you stimulate a lot of white blood cell growth, which is important, if you've got a wound, it's also important, maybe you've just had surgery on your cruciate, and you want to get some white blood cell action to actually clean up some of the mess inside there. Okay, it's a kind of healing process. It's also good for blood flow. Okay, at lower frequencies, you

can see got much better bone at sort of up to 2000 times a second, that's turning on and off a second, you get new blood vessel growth, and anything over 2000 up to 20,000, you get smooth muscle myocytes skin cells, okay? So in treating a joint, actually, what you want to do is a whole variety of different pulsing, so you can treat all the cell lines at that optimum level. Okay, and that that helps in regard to that. So it's, you know, if I was only doing a wound, I'd probably only start on continuous and do high frequency. Or if I was doing an Achilles tendinopathy, mid tendon injury, I'd probably only start with continuous and high frequency. But if I'm doing a joint, which is most of what we're doing, there is soft tissue, there's smooth muscle as new blood vessel growth as the whole range. And

Steven Bruce
in this bottom side here is a bottom part of the slide, which is probably only just visible on the camera, he talks about a variable duty cycle, what is the duty cycle on that?

Stephen Barabas
So what you can see on here, you can see on everything above the continuous it's on what we call a 50% duty cycle. So it's on off on off 50% of the time. So if this was eight watts, that's going to average four watts or for that was 20 Watts, it will average 10. If we go to slide 25, it's slightly different, okay. So so what you can do with a super intense pulse is you can give a little packet of photons at an incredibly high power and peak much higher, and instead of it being 50% duty cycle may be on for 30% off at 70%. So the duty cycle is what you're alluding to changes. And that means instead of us just getting hot skin, we can bypass a lot of the scattering the skin, which is our biggest enemy in regards of using lasers and get as deep as possible to that tissue without causing superficial heating. Yeah, okay. But beware, because I said this is a poorly regulated markets are some lasers say a weaken penalty, we can do 100 watts power and you're like, whoo, that sounds really and you're talking about skin burning? that would that would make me a little worried. Okay. The reality is, they're only on for a billionth of a second. So if you have, say, a 50 watt, power laser, and you're only on for a 1,000th of a second, actually, you're only giving point zero Joule point 05 joules, which is nothing. It's like a cloud. What does it need to be? It would be a class two laser, that would be a class two laser.

Steven Bruce
So where would that be for a class for laser to get therapeutic effect?

Stephen Barabas
you up to 10 to 195 joules per that makes it different per centimetre squared. So that's a factor of several 1000. Okay, so, you know, with that you could do maybe an acupuncture point, but you're not going to go and treat a hip joint or a neck joint as your client was asking.

Steven Bruce
So the big question there is when you're looking at buying a laser is to find out what the power delivered is, rather

Stephen Barabas
than how long the duty cycle is just just high power, the average power high power Yeah, the average power, high power doesn't mean much. Until you know, whether it's delivering it per second enough.

Steven Bruce

Gonna quickly ask you some more questions. And we're going across to shine a light on Susie. Lawrence has asked similar and has always asked, would this facilitate fracture healing?

Stephen Barabas
Yes, there are some really good where we, we work both on, as I said, the human and the veterinary. And it is used post surgically Sadly, in the NHS, not as much as I'd like it to. But an example is guys and Thomas's, where we initially we were using our laser, for all the worst case, hand injuries were that had surgery that had therapy that had everything, nothing was working, no drugs were working. And we were using on the worst case, chronic peripheral neuropathy, and things like that, and really bad scarring of teen offices and things like that. But now we're using it proactively. And the aim is to go and reduce those end stage problems that inevitably happening when you're operating on complex things like hands. So yes, if you use it productively, not only on the bones, but on the tendons, you can have very good success and healing and accelerating that.

Steven Bruce
Someone's asked a question, I haven't got their name, but it's a question which I know, came to our minds, when we were first looking at Laser do we have to make any changes in our treatment rooms to use this kit, you know, shiny floors, new shiny,

Stephen Barabas
again, part of the cool work part of the installation processes to do what's called a risk assessment. Now, a risk assessment is just to make sure your room is laser safe. I've never had a local authority check up on one of my clinics, but I never want them to come back and go You didn't tell us this, you know. So we actually do it to a very high level. And there are local rules that we have to follow. And we put make sure everything's done properly. And therefore therefore when we leave that clinic, if ever a local authority decided to pop their heads in the door, they would be that have been done it to the standard that it's necessary.

Steven Bruce
Look, Steven, I've got quite a few more questions in here but we we need to go and demonstrate this Can we go across and do some stuff with shows y'all and ask questions? Sure. We're doing that as well. Okay. Nice, Susie, thank you for coming in and volunteering yourself as a patient again.

Stephen Barabas
Thank you Susie. Are we going to do so I believe today we're going to treat if we have time, a little bit of Susie's neck and then also go and do Susie's elbow as well. And so you'll show two different aspects about this. First of all, you can see the portability of the laser I see that is it you know big but we decided to put it on a silver tray to make it look a bit bigger than the today but yeah, that that is it. You can

Steven Bruce
have a silver tray because of bouncing laser lights.

Stephen Barabas
For the purpose of this will be alright because we're not shining over that. Okay, okay, so my men in black moment we're going to give you these which are sort of wraparounds and it's important that the the goggles, you're using a specific to the laser, because the the it should

have a CE mark on the side. And that will tell you exactly whether it's specific for the laser that you're using. Okay, every one will be slightly different. Okay,

Steven Bruce
tell you what, I can't read my questions with these like with his goggles. Okay.

Stephen Barabas
I'll tell you when we're going to do it. Okay. So so the beauty about this is it's it's calibrated. But if you go to the sort of the plus plus version, then you can actually work out and change things accordingly. But for the majority of us, we're quite happy. Just understanding what's wrong with the patient, when we're going to treat them and the machine will Go and have that pre calibrated. Okay. So if we go into this, you can see it's on programmes. I'm going to start with this one, which is the sort of more standard treatments that we would do. And in the case of Suzy, we'll do we'll go and do the cervical you can see it's, it's based on three different sizes of individuals, really, that's a child mesomorph endomorph in regards to body size, and then we're going to go and do a cervical spondylosis. Okay, skin types really important because I said the both the red, and the infrared, especially the 800 can be absorbed by melanin, and Susie's quite light skinned, so we can go on a skin type Fitzpatrick too. And then in regards to the chronicity, it's sort of a little grumbling, pain, we're not going to go to the extreme in regards of it, but we'll do chronic and relatively high levels of pain. And that's pre calibrated there. So you can see we're getting about 2600 joules, it's averaging eight and peaking at 20. And we're going to do it over a five minute session, we're not going to do the whole session for today. But you can see it's also using all of the wavelengths. And if I go into here, it asked how we're going to deliver that. And that's an important thing, it will recalibrate depending on what head we're going to use. At this point, we're just going to use the standard head. And what you'll notice here, this is a fibre optic. Okay, so I unwind the fibre optic, because the actual laser is being produced internally to the machine itself. Okay. The machine sounds like it's on, but actually, it's not on until I actually release the trigger there. Okay. So in regards of Susy, on the machine setting at the moment is set at 150 square centimetres, okay. So when I go and turn this on, I have it as perpendicular to a neck surface. And I will just literally lightly touch skin. If I was doing a back, I might put a put a little bit more pressure on there. Because actually, you can almost use the head as a deep massage, which can be quite a nice sensation. But at the moment, I'm just going to gently go over and you can see there's just a standard hand movement there as I'm just going back and forth over the whole of the cervical

Steven Bruce
area. What can you feel Suzy? Nothing actually apart from the wand kind of moving on my neck. Yeah.

Stephen Barabas
That's good. I mean, it's if I if I stopped there slower, then you can feel a little warmth. Yes, almost Tingley. Indeed, there's a slight tingling sensation. But it's not an unpleasant sensation

Steven Bruce
is the beeping just telling us that the laser is active? When

Stephen Barabas
I showed you those differences in the pulsing, what that was doing is it's automatically you know, because obviously next fairly complex in regards of all the different cell lines in there.

And as each of those phases that's trying to optimise a different cell line. So it will start at continuous, go from low frequency, and then go through those other aspects. And so it will change as it goes through that. Okay. And I don't need to concentrate too much on the machine itself, I can just concentrate that I'm actually targeting the areas and obviously, in a normal scenario where it says, you know, be talking going back and forth in regards to how she's feeling, or it feels a little bit more there, I'll spend a little bit longer over one area, and it will allow me to go and adapt to what she's telling me as well as what I would like to go and do over the bigger area.

Steven Bruce
Between this and ultrasound is, for example, I mean, the ones look very different, very similar. With an ultrasound, you've got to stay right over the tissue you're trying to work on. Whereas you're waving that around quite a lot you do.

Stephen Barabas
I'm working over a sort of wide area, one of the important things we did from our own research was we showed the importance of blood circulation. And I think we forget, especially in the spinal area, how important blood circulation is, in order for the health of those neuro sites and all the other surrounding force at joints and everything. So if I can go on a slightly wider area, I will increase blood flow to all of the soft tissue and the bony structures in that area. So that's, that's important. Yeah. And we did some research on that, looking at that, I can stop it at that point in time, if I wanted to reassess you know, Susie may want to go and flex and move and then I in the machine doesn't change, it will just start exactly where I left off. And I can just restart and it will just continue going on. So you know, it's very rarely that someone feels uncomfortable a few times I've had that as people who've got really nasty fibromyalgia and in which case I might slightly downregulate the first treatments just to allow them with their sort of aberrant sensation to be able to tolerate it. Because sometimes in those rare scenarios, it is a little bit more

Steven Bruce
intelligent you might have to go over something again because there's a couple of people have sent in questions about safety here Mandy and someone called horse collector I'll go into why why they get these funny names, saying that the they thought class for lasers were more for surgical purposes and as manual therapists were better off using 3d or low intensity

Stephen Barabas
that that was the case in the 1980s and 1990s. But you know, class class for lasers now are well established in this therapeutic both in Europe and in North America and now in Asia as well.

Steven Bruce
So is there any rule for three B losers anymore?

Stephen Barabas
I think if you have a lot of time on your hands, or you're really only treating acupunture, then klaserie B's have a good part to play. And, you know, if you're able to hold it over one area for a long period of time, then then that's fine as well. Most of us though, you know, when you're treating a patient, yes, they've got a point emanating from maybe their spine, or they may be coming in with an Achilles tendinopathy. But you're more often find that it's actually related to some other parts of the body and an imbalance, and therefore, you are often treating more than one location during that time frame.

Steven Bruce
We had a couple of people Terrance and Daisy asking about fractures. Again. Terrence was talking about stress fractures, Daisy, about shoulder fractures. You already said that it's good for treating fractures to helping the healing process. Yeah, how specific you have to be with that, uh, you have to be right over the fracture site,

Stephen Barabas
or you'd be doing it right over the fracture site. But interestingly, whether they've got circulars wire or lag screws or metal, you can actually treat with it. So unlike Shockwave, where you would be contraindicated, you can use it on there. If there is a big plate, you just do it from the contract, compensate, because you will get reflection back off that plate and you don't want to go and do it on the tibia on their femur, where there might be, you know, just get reflections straight back to the skin. So you do it from the around the sides of the actual thing. But if you have circular wire or lag screws, not a problem at all, if it was like an biceps, or Kilis

Steven Bruce
Chandra's asked about whether you can use it on peripheral neuropathy, for example, in diabetics, and is it effective?

Stephen Barabas
Yeah, we have a number of studies, where we have gone and shown the benefits in regards of diabetic ulcers, as well as neuropathies. And there is a study we did on 70 women with peripheral neuropathy, their lower legs, unfortunately, was induced by cancer treatments that caused the neurological damage. But in doing that, it was across over double blind study, and it had a very good success rate. Okay, I stopped this now, just for the purpose, though. Okay. Susie's feeling good. Yeah. So I'm going to stop this and push this out, you can see we've almost finished the whole treatment there. And it was going through the phases, I'm just going to show you one other aspect about this machine. So this is the Bruce. So Steven Bruce, when he alluded to the fact that there's some new technology here. So on this head here, not only does it deliver the energy, but it also detects it coming back. And that's important because we never want to over treat an area. And the feedback photons allows this some modulation in the amount of photons we're delivering at any one point in time, there is something also on this machine that goes and takes it to a new level. So I showed you that side on the left hand side on the right hand side here, what you got, it looks for all intents and purposes the same, we start at the same. And if we were doing say the cervical again, and we can go down and treat the spondylosis. And we treat the type two skin. And we do the same level that now it asked you how big an area before it was calibrated at 150 square centimetres, now we're doing a bigger area now. And we can choose a bigger area or a smaller area depending on the symptoms that Suzy was showing. So if I slightly change that, we could click on the floor there. And we can increase that maybe by another 10 centimetres. And in going and clicking on there, you got the sort of darts board effect there, which again, looks different. Not all of us are laser physicists like myself in this I've had to learn a lot in the last decade, most of us understand that terminology of anti inflammatory about deep perfusion about analgesia. And you can change all of this as and when you feel as a clinician, which is important. So you're much more in control of terminology that we understand in the medical or manual therapy area. But again, it allows you that capabilities. And so when I do this, it shows you the same heads and you can do it remotely or directly as we're doing now. And it will go through this process. And that will give you a different sensation, this machine actually goes up to 30 watts. So some of your people asking, we're

asking about, you know, the power levels. Well, you know, in this case, we are now able to go up to 30 Watts, which is delivering a lot of energy. But what I've learned in the last decade of using laser therapy is actually the limits of what we thought was capable of keep being pushed further and further. Sometimes you need to put use less energy, which is calibrated into the machine, but other times, especially on chronic pain and deep muscular skeletal spinal injuries, more energy can be more beneficial.

Steven Bruce
We've got a couple of questions about what else it can do. Um, Simon has asked whether it can be used to treat cardiomyopathy. But also I believe I saw something about it being used for respiratory problems as well. Yeah.

Stephen Barabas
Call him up. I don't think we are at that point in time. I don't know any study globe We were looking at, could you after damage, it can definitely penetrate down to the heart. But I don't know of any study there that's actively looking at improvements in the heart, both neurologically and muscular. In regards of your other thing. Absolutely. We for a long time, so that you can see, interestingly, that was a shorter treatment time now, and we did that because we were using quite a lot more power that that was okay. Yeah, yeah, it

Steven Bruce
just it felt warmer. And we got four minutes left, no problem. So we're at sort of approaching the end already, as always, the short shows we try to pack a lot in. Can I ask you some quick final question? Yes. New Type. And you asked

Stephen Barabas
about, sorry, the lungs? Yes. And yes, during COVID, we were doing research both in Asia and in North America. And it came off the back of work that we were actually doing in the dog because the dog, Westies get chronic pulmonary interstitial fibrosis as a genetic problem is that we've already got working with the University of Minnesota, we've done a lot of work with them. And therefore, we already had the technology and some of the protocols. So we put that into place. And actually in Malaysia, and in other European countries, they were using this technology for COVID patients as an acute respiratory pulmonary fibrosis problem. Okay,

Steven Bruce
so with good success,

Stephen Barabas
they've got published papers out of that. Yes.

Steven Bruce
Yeah. I'm not sure. Are you aware of any manual therapists using it for that purpose in their clinics? Or was this all

Stephen Barabas
there are? Yeah, they're the the person I refer to most actually, as a chiropractor in North America, and Dr. Hall, he's probably treated 500 patients or managed. So he managed 500 patients with chronic pulmonary fibrosis, and they come from all over the country to go and have his treatment. Compliance we haven't spoken about is important. So like, like a drug, you need to be compliant. And therefore we talk about people coming at least twice a week,

you can come more more frequently if you've got an acute injury, but twice a week for at least three weeks to go and see some biological effects taking effect during that time frame. And then you might go on a maintenance dose,

Steven Bruce
some other conditions. So how about can it be used in conjunction with Shockwave? I see wondering from

Stephen Barabas
absolutely I we actually sell a shockwave so I actually think shockwave is a very good tool. But it is a little bit more of a blunt tool and a good laser therapy.

Steven Bruce
But sorry to interrupt, I'm trying to rush of course, we have somebody who is very, very familiar with lasers. And I don't know whether it's your laser or another, but we were talking about getting shockwave in my clinic and her advice to us was well, if you're going to get laser don't bother we shockwave because this will do pretty much

Stephen Barabas
what it depends on which level you're at, you know, if I was doing out and out sports medicine, and I was seeing a lot of chronic tendinopathy is that then a shockwave and a laser. A good laser is a great combination therapy because as I said, Shockwave does a better job of breaking up the scar tissue. But if you're a great manual therapist, you may be able to do that manually without having to use Shockwave. Lasers better at putting it all together and not rescoring because one of the things the study shows is you create a lot more type one collagen with laser, and less scarring, type three, so you don't rescore where you've just broken up scarring, which which is important.

Steven Bruce
Okay, you got one word answers on these can it be treated? Can you treat OAE? In the hands? Yes, we work. And you got one word answers, I'm afraid because we're out ran out of time. So what about degenerative disc disease?

Stephen Barabas
Yes, sort of.

Steven Bruce
And can we take our glasses off? Now? I've been told, I've got some more questions on my list here. I'm really sorry that I've had to rush through this last bit. But as always, you know, we get really soaked up in the discussion. And we've just run out of time for everything, I will send out the slide deck for you. So you'll have perhaps not all of the 81 slides, but I'll give you a PDF handout of all the things that Stephen would have liked to have discussed. If you want any more information, then contact me and I'll make sure you have Stephens direct contact details as well, as long as he's prepared to share them, of course. But that's that's all we've got time for this lunchtime, which is, which is astonishing. He's gone so quickly. Wednesday evening, we are planning to do two or three case based discussions for you. So we're going to come up with some interesting cases, some imagery to go with them. And the point of it will be to work out what went well, in those cases, what didn't go so well, how we would improve that treatment and get your observations and your critique of how they were handled, as we often do. And we're doing that because we've been criticised because we always do our case based discussions at lunchtime, and lots of people aren't available at lunchtime. So we're going to do some evening cases. That'll be followed later next week will

be followed next week by a lunchtime case based discussion. Tuesday the 15th. We have got Simon Marsh back in the studio. Sorry, I think it'll be a virtual show that one, we've got Simon Marsh on again. He went down really well. Last time we had him and I'm not sure what his topic will be this time but it'll be great. Don't worry about that. Quicker than that. sooner than that. We've got a day on Sunday, Sunday the sixth when we will be running an MRI analysis horse in the studio here, Rob shanks and Darren Chandler can't praise them highly enough for their skills in helping us manual therapists to get our heads around analysing MRIs, it'd be really, really useful if you can attend that course I think it's 70 Odd quid, something like that. But it's a whole day of learning to look beyond the radiologists report to see the things which radiologists inevitably sometimes miss. And also for you to be able to analyse the imagery so that you can tell what to do with those bits of the imagery that the radiologists were never asked to look at. So it'll be a really good course if you've seen Darren and Rob on the show before you'll know just how knowledgeable those tomorrow and I can't emphasise enough just what you've gained from that course you will not be disappointed. And I'm looking ahead to the 30th of April in here. We've got a party in the evening. We're doing a live 90 minute CPD show with live music. I'm going to run on after the CPD with that music with some booze with some nibbly things and we're gonna have a great time we also have a housewarming party for our new studio. Sorry, I've waffled on that's it. Hope you've really enjoyed today's show about lasers. Hope to see you again soon. But that's it for today.