

Functional Exercise Prescription: Beyond the Strength and Conditioning Model - Ref 312

Steven Bruce 0:10

Good evening and welcome to a very exciting Wednesday evening. exciting because we have finally managed to get into the studio with someone who has carved out a reputation for himself through his own research and his clinical expertise. He's also someone I've known for for years, and I've been trying to get him on this show for almost that long. He's written a number of books, some of which I've got with me this evening in the studio. He's an honorary professor at University College London, where he is researching the clinical application of functional stretching and rehabilitation. He's the brains behind some novel approaches to treatment, harmonic technique, functional stretching, and now a process approach to treatment, which I don't think I understand yet. He is also a practising osteopath, and he has a PhD in physiotherapy. What he does in his spare time, I just can't imagine because I can't imagine he has any spare time. And he is, of course, a alidium. Oh, thank you for finally agreeing to come on. Thank

Eyal Lederman 1:01

you very much for inviting me. It's a great pleasure.

Steven Bruce 1:03

Tell me about the process approach. What's that?

Eyal Lederman 1:05

So process approach? We'll talk about it later. It's too early. It's too early. It's very part it was an important part of a functional exercise prescription.

Steven Bruce 1:14

Right. Okay. So

Eyal Lederman 1:15

we will cover it. During the lecture, probably the second half of the lecture, we'll get to it. If ever, I don't know, I don't remember questions. We don't know where it's going.

Steven Bruce 1:24

There's one thing I didn't credit you for in the intro there as well as a great friend of the academy and of many of the people who are members of the academy is Laurie Hartman. Yes. Who decided to take a dive off his ladder from his roof many years ago. And you were very much instrumental in bringing him back to complete health again.

Eyal Lederman 1:42

So literally, the those principles that I'm going to talk about this evening are basically what I use to help them rehabilitate. I mean, the strap line of any rehabilitation is, I mean, we can finish the whole lecture on by the stop line. The stop line is a practice what you aim to recover it. It's as simple as that. Yeah. And it's always been very, very simple. It's that humans, we tend to complicate stuff.

Steven Bruce 2:08

Yeah. So why okay for humans complicated stuff. But we've been researching this sort of thing for ages. What's what's new here, we've got this book only published last year, functional exercise prescription. So what's new about functional exercise,

Eyal Lederman 2:21

because it's never been made into a science. This is my attempt to make it to into a kind of structured sciences, we can understand it, we can be surgery. And this was the idea we, we did a PhD with an osteopath in UCL, and she looked at functional exercise prescription for India, individuals who haven't recovered after knee replacement. So we think that we should do them after a year. And she looked at the addition of a functional exercise. And it was a pilot study. And the results were fantastic. Overwhelming results, right. And then we decided to try to run it on a multi central idea with other universities, clinics and so on. But COVID took over. And so the whole thing was kind of pushing back. And only now we're beginning to maybe look into it. Maybe small studies again, to start off with started off.

Steven Bruce 3:20

So just on that particular study, Was she taking people who had been through normal care, and yet doing one thing to them? What was she comparing functional exercise with other forms of care at the same time? I

Eyal Lederman 3:36

mean, all she did is so these are people who have, I think it was 21 individuals who didn't do very well, the A year after the surgery. Yeah. And also what we did was we gave them a step counters, and ask them to increase it week by week of a three week period by 20%. Sales 20% Each week, each week, on top of the previous one, and they leave it for three weeks, and they need walking up the downstairs. And just walking. And like I said the results were actually remarkable. On every aspect that we looked at psychological functionality, pain we took actually took videos so we actually could do biomechanical assessment, everything every Pamela she looked at, improved during the time. So it was so exciting. And there have been studies on functional functional rehabilitation, but not enough. And you'll see explain why.

Steven Bruce 4:34

You may say there's not enough but I mean, we've got your book here with us. It's only about 20 pages long, isn't it? Most of its list of the research which goes behind everything

Eyal Lederman 4:43

exaggerating. Yes, yeah. So it explains the physiological, neurological and psychological principles of why you would want to go into functionality. But the research on functionality is very low. So the mountains and mount In terms of length and conditions, and conditioning, huge amount of research, there is a single heal, comparatively speaking of research on a functional rehabilitation, it's very, very valuable to find. And kind of my idea is to bring it back into the font of rehabilitation.

Steven Bruce 5:22

So is, is the research behind a functional approach enough to justify it, that

Eyal Lederman 5:27

is the research. But not enough, right? On actually taking people and giving them functional exercise, not enough. That's what I'm trying to do. For the science behind it, there's a huge amount of research, which I'm going to talk about, that explains why you want to go in that direction. And so we're going to look into the different ways of looking at it. And

Steven Bruce 5:54

so where should we start the sequence? Should we start with, you know, what's happening post injury, whether that's surgical, or traumatic? or whatever else? Or should we start with what actually functional, functional Brodies?

Eyal Lederman 6:05

And we can do that we can also I've got some slides. So I thought it's first the show what what is the problem with this length and conditioning? Okay, what happens if you go out and functionality for rehabilitation? And this is what I'd like to discuss. Is that okay, for me, okay. So hopefully, that it works. So what we are not seeing it on the screen behind. Okay, so the aim is to help individually cover the functionality, ability to carry out daily activities effectively, efficiently and comfortably. That's basically the idea of rehabilitation, rehabilitation.

Steven Bruce 6:45

And that could apply to a 90 year old whose daily activities involve walking from the bedroom to the kitchen to the sofa, or a rugby player.

Eyal Lederman 6:53

Absolutely. Yeah. And the physiological mechanisms are all the same. Okay, now, the problem. So I've got an example of a patient who is 75 years old, which I didn't get habilitated Using functional approach. And he had a full he's a surgeon himself, so he was happy for me to show it. And he was very much into it the whole thing. And because he couldn't have surgery for the damage that the headphones to his shoulder after his fall, and you can see, it's quite extensive, he's got to complete the capsule of the glenohumeral joint, he's got complete tilt of the supraspinatus tendon, the long head of the bicep is known as a fusion of into the joint space, it's quite a damaged shoulder. But he couldn't eat couldn't have surgery, because he said a lot of ground conditions that would have made it very dangerous for him. So we did functional rehabilitation from time to time during the lecture, I'll merely fail to that, how I did that. But it's basically he was mad about tennis. He, the first question I asked him, What would be the most important activity you would like to return to what is the most important thing for you, so we immediately set a goal. And when we the patient's motivation, they said, I want to be back on the court playing tennis. So we use tennis to rehabilitate tennis to everything is functionality around tennis. So

Steven Bruce 8:18

not surprisingly, you're not the first person to say about clinical approaches, you find out what it is they want to do, because that's going to set your goals. But it's very easy not to do that isn't Oh, I remember being taught it in college at all in no. Shoulder, this is what you do.

Eyal Lederman 8:33

Yeah, because it's it's not the patient centred, a lot of the apathy, it's fairly centred. So the patient only gets better once we've collected the body into the right position in any sort of way. It's not what the patient needs, which is, ultimately everybody wants to recover their functionality. That's the end of all treatments.

Steven Bruce 8:56

But we will not will come in saying what I really wanted to get rid of this pain.

Eyal Lederman 9:00

But this pain is usually associated with activity. I have this pain when I'm doing I'm doing gardening, okay. So rather than focus on pain, maybe we should focus on getting you back to gardening. And hopefully pain will also be reduced in some way with some weight. So we'd say again, your pain is not tangible. dabbling is tangible. It's a goal you can really work easily towards. And you can measure progress going to absolutely how long you stay in the garden, how much pain you're getting, and so on and so forth.

Steven Bruce 9:27

Yeah, just out of curiosity, you're gonna go on with this 76 year old surgeon in a second. How soon after his fall, did you start working with him?

Eyal Lederman 9:36

Okay, so immediately. So, within a day a day or two after injury, you can start with movements like habilitation covering the inflammatory phase at this day, inflammatory phase. Now, inflammatory phase. Interestingly, you don't need to do functional activities. You can do any activity because you are supporting the repair process, so it doesn't matter. Doesn't matter. As long as you move as as long as you move. It doesn't matter how you move. And when it becomes functionality becomes really important, for example is in the third phase of the inflammatory process, which is the remodelling forces and this remodelling appears, according to the mechanical, physical environments that we impose on the body, the body of shapes itself are going to those forces. So very quickly, within a couple of weeks or even less, you want to start becoming functional. Otherwise, you have to do it much later, when the tissues have adapted in the wrong way, they're not as flexible or mechanically strong, as species of the skin functional mineral.

Steven Bruce 10:42

Perhaps this is a question of a little bit later on. But I'd be interested to know your approach to someone who can't mobilise a joint after their injury, it's either in a cast or something like that. I learned from reading your book that you're going to start to get adhesions, possibly within 15 days, but a really quick cast might be on for six, eight weeks

Eyal Lederman 11:01

Exactly. But this is a situation where we don't have a choice. And we've chosen that if you don't move how quickly things become Stasia. And how much more difficult it is once you learn to use movement to regain it back because you have to fight against all the changes that have taken place the negative changes. And they become more entrenched as time passes.

Steven Bruce 11:25

And so sorry, I distracted you from your 76.

Eyal Lederman 11:28

So thank you. So. So I'm going to start doing tennis really, really quickly. But so two weeks was kind of a non functional exercise just to do whatever you want. And but then fairly quickly, I got into a whole tennis racket, and just walking around the house and swing it. It was the kind of confidence and boy,

Steven Bruce 11:53

when you say two weeks, just do what you want.

Eyal Lederman 11:57

With, with over with supervision, of course.

Steven Bruce 12:01

Yeah, I was just thinking a lot of people would say, Well, I don't really know what you mean by that. Why do you want me to go to the end of range or

Eyal Lederman 12:07

within the painfully ranges? That's the bottom bait? Yeah, yeah. So you follow what you follow what the body tells you pain is a guide, because we don't have any other guide. And it's not a perfect guide, but it's, it's useful. Yeah.

Steven Bruce 12:20

But active movement movement, I'm assuming what about passive movement here?

Eyal Lederman 12:25

Absolutely. You can do that. My osteopathy on all physical therapies. So moving the joints? Yes. It's actually very beneficial for that.

Steven Bruce 12:33

Yep. Okay.

Eyal Lederman 12:35

Thank you. So here's the patient. Six weeks later, so I'm going the wrong way. And if we can play the video, so you'll see him six weeks later. This is the arm that's been affected. And it's pretty good actually.

Steven Bruce 12:56

Remind us he had a completely thickness tear of

Eyal Lederman 13:00

the capsule, superior capsule, fulfil the supraspinatus fiber of the long head of the biceps effusion into the joint space, and probably a host of other things that I'm not mentioning. But this person had every shoulder injury possible in one shoulder. Yes. And nothing dramatic and rehabilitation just using tennis and the thing that he loves most to get him back on the court. And that's what he wanted. Let's find we're good. Yeah.

Steven Bruce 13:28

Okay, so that was six weeks it took to get him to this stage. Yeah. And at this stage, he wants to

Eyal Lederman 13:34

rehabilitation. That's the timescale. Yeah. So a lot of things about six to eight weeks by the eighth, eighth week. Usually, I usually stand around scratching my head thinking what's next? It's really finished. Now functional.

Steven Bruce 13:46

And was he was he as good at tennis as he as he had be? So

Eyal Lederman 13:50

he claims I asked him on the first day, this is the first day you're watching. He claims that it was 85% to the level that he was playing before right now he's I've seen him more recently for other joint replacements. And he still plays fantasy that's 45 minutes to us just follows all these blue principles of

Steven Bruce 14:14

did he make full recovery here back to 100% you think is too much to expect?

Eyal Lederman 14:19

I don't know actually, I never asked him but he seemed quite happy with

Steven Bruce 14:24

that last 15% Presumably doesn't need your supervision it just means complete.

Eyal Lederman 14:27

That's going to be polished off by just playing usually that's yeah, I don't always treat people to the end because I live in polish it themselves later so they feel that they are doing something for it. Okay, successful.

Steven Bruce 14:42

He obviously they had all these injuries to his shoulder, he could still move his shoulder you see someone with a true frozen shoulder will tricky, isn't it?

Eyal Lederman 14:51

When I saw him, he didn't have any arm movement. It was a dead arm hanging by the side of his body. Right? So the first phase if it wasn't A lot of pain there was a lot of hematoma in the arm that disappeared. After two weeks, we just movement within the painful ranges. And then the functional started with zero shoulder movement. Right?

Steven Bruce 15:13

Okay. Would that be the same with the frozen shoulder where the phases can be quite lengthy before you get pain free movement or enough to

Eyal Lederman 15:19

leave? I usually with full shoulder I divided into a painful phase and a stiff phase because it's easier to remember the three phases, basically. Yeah. So the painful phase is usually I give the patient about four to eight weeks, it's fairly rapid. And then about for about two another good eight weeks to again, though, is the functionality range, not necessarily the full range? Yes. There are two different things, there is the range that I as an osteopath want to see. And there is a range where the patient feels that it's sufficient for them to maintain to go back to daily activities and fulfil their functionality. Yep. Okay. Okay. And it's gonna get really kind of legalistic. We never finished this lecture, you can always,

Steven Bruce 16:17

we never do anything with fewer slides than you were we? Certainly, what's the question?

Eyal Lederman 16:23

Really good for getting the stuff out of me. And so for example, just talking about the goals of movement, I had a patient, a woman who was 50 years old, and she had frozen shoulder, which was made worse by a manipulation under anaesthetic. And so after a year with the arm hanging by the side, couldn't move it terrible pain. And, and what happened is, after the period of four to eight weeks, she was painfully but she was, at this level, she could lift the arm now to this level fairly, fairly, painfully. When I started the rehabilitation, I asked her what would be the thing that you really licence you would really want to be able to do again, and she says, I love cooking. I love being in the kitchen waiting for things and tossing and turning and all that. And I said, Okay, and so I told the tale, and she got better. But she disappeared. at shoulder height, she disappeared. And she reappeared about two years later with plantar fasciitis. And I asked her, Well, you know, how did it go, you know, you disappeared? Was it good. And she said, it was a fantastic treatment, it was so successful. And I couldn't go to the site. And I said, Yeah, show me show me show me. So she goes a she lifted up, and then just look, I can now lift, I can reach for the top shelf. Okay, for me, it's it's complete total loss. Worst osteopathy ever existed. For her, it was the successful treatment, because that's what guides treatment, ultimately, and people will leave the treatment, if they feel the leverage of the functionality, which she did, she can now reach the glass on the second shelf that you could Now compare that to a dancer, the same situation, have you a year of frozen shoulder. And, you know, the whole thing could move. Three months later, he's got almost full range of movement. And when you lift his arm, there's only about a difference of two inch between the physician. And I said to him, Look, you don't need any more treatments, you wish your functionality you can go and you can be polished off. And he said no, absolutely no, as a dancer, I needed to be exactly exactly the same. And so we went for another month. And he was actually he had more movement in the affected side and the unknown side. So the motivation and goals is really, really important to set from the beginning.

Steven Bruce 18:48

I was going to ask you, though, I mean, let's say your functionality is such that that achieves what you need. Is there any benefit, even though you don't need it in having a greater range of motion available to you, you only

Eyal Lederman 19:00

need the range of movement available to carry out your functionality. So you mentioned that idea of doing someone wanting you to do a split. And we were talking about stretching earlier on stretching out here. Yeah. And, you know, why would you want to do a split when your functionality is required? I used to be able

Steven Bruce 19:20

to I did point out to you that I very quickly learned that I didn't want to be able to Yeah. Anyway, sorry. You were busy telling us how you fix the surge of media, the tennis.

Eyal Lederman 19:36

Okay, so, so let's let's do that. And so, a during the lecture, I would like to go back to this example and talk about how I've done it in more detail if necessary. Yes, but you'll see why I use tennis for recovering tennis. Yeah, okay.

Steven Bruce 19:57

You're gonna move on now. Oh, yeah. We got to continue wherever whenever you We

Eyal Lederman 20:00

want to go okay to show our Okay, so when. So if we're trying to introduce something new, which is actually it's not new, I didn't invent it, I'm just focusing on it. I'm really good at kind of identifying what's in full sight in a way. It's been there all the time. I'm just trying to make sense out of it. And it's quite

Steven Bruce 20:23

a skill in though.

Eyal Lederman 20:27

So, so the question is, what's wrong with what we do already? You know, why? Why do we need to change anything? Why to stick with what we know. And this has to do with this, that if when people go to see a consultant of any kind 40 to 80%, of what is said to them is forgotten immediately when they leave the room, just.

Steven Bruce 20:51

And that's supported by some evidence.

Eyal Lederman 20:54

The way everything is, you look at this slideshow later, and you'll be able to see all the slides and the references for you to will 50% of us remember incorrectly. So just imagine all the time, the times that you're in clinic, giving people exercise, and to realise the next time they come that it's completely do something different that you gave him. And I have, I've learned the hard way, the sexually, I had a patient with an impingement syndrome of the shoulder. And very, very painful. And he had it for a while, and I devised these amazing, elegant osteopathic, a eccentric exercise where you place the arm down in this position, so it's abducted, and then you proceed, then you proceed there. And then it's inflection the shoulder so you can cover the whole range and do all these amazing exercise. And I showed it to him. And he returns after a week and he says, Yeah, I'm cured. And I so how did that happen? Because I know, impingement syndrome. It's a tough one to tweet. And he says, Well, what I did is for the whole week, I stood, and I live this all week long. And I

thought, you know, it's nothing that we only received, it's not something I gave you. It's not something I recommend, it's now

Steven Bruce 22:11

in the book, isn't it?

Eyal Lederman 22:15

So something completely out of the blue and, and obviously, it helped him. So the thinking about exercises, it's been there for a long time. Why? Why would give one given? I mean, a lot of the time we give exercise between like, it's not patient centred. So I used to be a yoga teacher, if you can imagine long hair, big beard can't imagine that part. But it was there. There was hell before baldness. And then basically, every patient that came through the door, whatever they've got, I would give them stretching yoga like exercise. Yeah. Which is totally unsuitable for, you know, if you came to me, you would be unsuitable for you. It's not something that you would enjoy doing or you want to do, whatever. So there was a place. So this is a process that you're seeing that has happened, okay. And over many, many years. It's not something that they just woke up a year ago and decided this, is it.

Steven Bruce 23:13

No, no, I want Sorry, I wasn't employing you. And your nine year ago. There

Eyal Lederman 23:17

was a layer long story behind it. Also, it started with my PhD. That like the it was, actually was the first PhD which was a collaboration between osteopathy and physiotherapy. And we landed, we sheltered the BSO, Trafalgar Square, it was there. And I was looking particularly at motor control, and manual therapy in physical therapy. And it really did this whole thing emanates from this, the origin researcher, the VSO, which was how long ago, and I finished it in 98. Do the math, I can't do it.

Steven Bruce 23:54

I'm intrigued by this, because we were always very fond of saying that you tell people to do exercises and they won't do them, but hadn't actually realised that most of them will forget it straight away. And then Miss remember in the other cases,

Eyal Lederman 24:06

exactly. The other problem is that 50% will comply, but few will adhere. So they might, they can sit in front of you. And they can say to you look, Yes, I'll do fantastic exercise. I'll do the exercise. But they go home and life takes over shouting kids well, and isn't enough time for weight and the consequences. embarrassment, leaving shame, guilt. It actually is counterproductive. Right, because

you keep them with something that is hopeless, they won't be able to do anyway. Yeah. So that's that's one of the dangers also.

Steven Bruce 24:47

I know who you want to get on and we've already decided we're not going to finish your your discussion this evening. But I've had somebody else I'm not quite sure who it is. But somebody said what do you do after the inflammatory phase? Because we're talking about inflammatory remodelling.

Eyal Lederman 25:01

So yes, so there's inflammatory regeneration, sorry, regeneration, and then the remodelling phase. So during the first two phases, you want a lot of movement, structural strength of the tissue is not returned yet. Because let's just talk about what is inflammation. Inflammation repair is the body's way of replacing dead and damaged tissue with living tissue basically. And so the first phases have a lot to do with that removing the old stuff, and kind of electing the next regenerated tissues there in that place.

Steven Bruce 25:38

You've got a lovely analogy in here to a building site, that's my

Eyal Lederman 25:42

folding, and that's why all the rubbish when a building is damaged and putting in the new stuff. Exactly. And then comes the remodelling, which is very interesting, the remodelling because it's very responsive to the mechanical environment that we impose on the sales of the tissues undergoing the repair process. And sorry, I lost my train of thought the question was, what do we do after the geometry. So it's, when you look at the remodelling, it's a little bit like sculpting in clay. You know, when people make a bust of the face or something like this, they, they tend to add stuff, and then they pick out stuff and add more stuff here and less stuff there. So it's kind of a leech adding and removing stuff, according to the mechanical stresses imposed on the body. So that's the periods where you really want to now move into a functional approach where the stimulation is very similar to the wheel activity, the person is trying to recover, because the matrix the fibres will be laid down in the best pattern to absolutely, absolutely. And that's been shown since the 1980s. You know, it's dancing expensive research on animals humans. So now it's really really important.

Steven Bruce 26:50

So on that basis, when you're when you're moving from the just keep it moving within the pain free range to that now let's start doing some function exercise. How do you judge you've reached the right time?

Eyal Lederman 27:03

Okay, because, you know, because, you know, it's about two three weeks or something like that. But how

Steven Bruce 27:09

many people reinjure their, their tendons or whatever within that time so that you know, there's still an inflammatory phase going on? Doesn't that matter? They

Eyal Lederman 27:19

don't you can get people injuring by doing too much in the beginning. I mean, luckily what most of what we see probably as osteopath are not severe hospital hospital level injuries. Yeah, they will be minor details. microscopical tails. So as long as the tissue is intact, and you got one final gone, and you know, it's probably fine. You can still load it in, you can still work on it if necessary. Yeah. But if you have a completely uniter like this, that's substantial. Yeah, it might never. So it all depends on that.

Steven Bruce 27:55

Yeah, it did take me a long time to understand that a full thickness tear wasn't the same as a rupture. So you're gonna have a full thickness tear of Supraspinatus. But doesn't mean you can't use your Supraspinatus. Yes, because there's a lot of other stuff around plenty of other fibres doing that job. Anyway, where did we get to in

Eyal Lederman 28:13

the discussion? Okay, so, so we have seen looking at, what's the problem with what we do now? Yes. And it's well known. These articles in The Guardian, and I think somewhere else, Guardian, and what's the other one? BBC

Steven Bruce 28:29

BBC. So this is researchers say that current exercise guidelines are unrealistic. And this one, taking the stairs and getting off the bus stop early are more likely to help against heart disease and early death and working out. By which of course, they mean going to a gym and sweating yourself silly.

Eyal Lederman 28:45

Yeah. Now, I'm not just to start off, I'm not against genes. They all human activity is good is better than inactivity. And so even if someone comes to me in the workout in the gym, I would try to rehabilitate them to the gym, and not lose to some other exercise. I would always go with what they do anyway.

Steven Bruce 29:06

For many people, the gym is a psychological benefit, isn't it? Because they want to know if it's the end? For some people. It's quite the opposite. They don't want to go

Eyal Lederman 29:12

Yeah, yeah. I mean, you wouldn't catch me in the gym. But I do. I'd like to doing resistance exercise. So I would do it at home against bodyweight or something like that.

Steven Bruce 29:21

Yes. Okay. And this term function size up here.

Eyal Lederman 29:26

So this is something I'm proud to introduce into osteopathy, but it didn't take your take on, please. Yeah, so I tell the patients and they like to come out with an idea. So they say, Oh, this is different. What what what do you do? I call it function sighs it's using daily activity to get you rehabilitated.

Steven Bruce 29:48

Again, you pointed out in your book and in some of your slides that a lot of people only think of exercise as meaning dressing up in shorts and a T shirt and putting a towel over their shoulders.

Eyal Lederman 29:59

Yeah, We actually got a few slides on that. I'll come to that in a minute. Yes. Okay. So, so we know there is a problem that I've already stated. But there's a bigger problem that people don't know about. And it's a physiological training principle called specificity. So if you're a sports science, you would know about it. If you're a researcher into motor control, you would know about it. But otherwise, people don't know about it. And it might be hidden on purpose from us. Because it's really uncomfortable this principle, right? And it

Steven Bruce 30:45

sounds as though it ought to be simple and straightforward. specificity.

Eyal Lederman 30:48

Yeah, you basically you only learn what you practice, right? You can't learn what you've never practised. It sounds sensible. But then we give people really crazy looking exercise, to rehabilitate

their walking or get them to play football again, exercise them don't look like Goodwill. So you can see the problem because we are now using exercise. The third is similar to the activity the person is trying to recover. Right? Okay,

Steven Bruce 31:21

but what about those exercises where someone comes in, they've got a chronic low back pain, you do some work on them, and the exercises you give them are, I don't know. Cat stretches and Superman down

Eyal Lederman 31:33

the floor. And that's exactly the problem, because humans don't usually do that. Unless they want the car to do this kind of exercise like in Pilates or yoga. Yeah. But most humans, you don't do that in you know, I don't know, maybe you do. Your bedroom, when nobody looks up?

Steven Bruce 31:48

No. I've got the costume in the wardrobe. Other than that, Superman, so

Eyal Lederman 31:53

Okay, so just want to take you through the specificity principle, because it's really important to understand why functionality is so dependent on it. And the whole idea of functionality is centred around specificity. But basically, imagine that you decided tomorrow to start doing yoga. And if that is for six months, right, after six month, you, your body will adapt in order to optimise your yoga practice. So you look different, your muscles will function different your multicontour will do your you think differently, you will feel differently, everything about you will change, you will be actually a different person, you might not realise this, but you are going to be physiologically physically, mentally, whatever, a different person. Now imagine that after six months of this thing, now, not for me, let's do some weight training. Exactly the same thing that happened to body adaptation is basically the body's way of propel you for future encounters. With activities, you can do it more optimally. So the same thing happens here.

Steven Bruce 32:57

Does that mean if she went on to do weight training and then went back to yoga, she would have lost the stretchiness that she had in yoga, or

Eyal Lederman 33:03

no, that's not the point I'm trying to make. Alright. But it's a good good question. Actually. You might have some remnants, but I'm not sure. Then after a few months of weight training, you decided to do something like marathon running or sprinting or something like that. And basically, your body will

do the same thing. And after that period of time, you'll be again, a different person altogether. Now, the important thing is, when you train for one of them, the gains, the training gains, from that activity, the initial activity doesn't transfer doesn't carry over to the new activity, because it's a completely different demand on the body. Okay, and so on, and so forth. So what it means is that you need to be very, very, very close, and very similar to the activity you're trying to recover or enhance. And the more you go, the more dissimilar the less likely it is to happen. So if you're doing sort of a cycle that for your question, so what you can see here, if you want to improve walking, you can do a lot of this stuff. Separately, but ultimately, walking, rehabilitates walking, there's nothing else

Steven Bruce 34:18

and people were watching, we're gonna read this, but the top it says that what we're relying on here is a transference of this training into that it's less likely than this one into that trainer.

Eyal Lederman 34:27

Yes, yeah. And the bottom with the strength and conditioning. So let's say you have a problem doing this. So let's say we identified it as a false problem that you can't lift your arm up. So what happens is that in strength and conditioning, that false component of the movement is then kind of taken out of context for at least somewhere else as a different exercise within the hope that somehow it will. We can transfer it back into the original stuff which was trying to do that And basically, when we do something like this, what we are telling the brain to do is do this and get ready for doing more of it. Exactly. That's the whole nature of adaptation. If that wasn't the case, then we will have one universal exercise that will cure everything. Right, which is strength. And people think so I

Steven Bruce 35:16

have a question for you then. Let us take the average rugby player. And our scrawny little 16 year old comes out of school, he's six foot tall, and he wants to play rugby. Using any of those principles using these principles. He would go out and play rugby and play rugby and play rugby, and that would make him better. But all rugby players are built like Charles Charles Atlas. Mano Schwarzenegger, yeah. And they would probably argue that they need that strength, the muscle bulk that they've got in order to be good rugby players. Is that the case?

Eyal Lederman 35:46

I don't know enough about rugby. I understood that. People have different roles in rugby. And they don't train necessarily exactly the same people that because of the specificity problem.

Steven Bruce 35:59

But they are all very, very heavily built. Because I

Eyal Lederman 36:01

guess when it comes to crashing into somebody, he wants to be big and massive in his caronian.

Steven Bruce 36:08

So in which case there is a role in building up that weight. Yeah, but maintaining your fitness.

Eyal Lederman 36:12

Yeah. But if you build all that muscle, and then you try to run really fast, it might not serve you very well.

Steven Bruce 36:19

I guess I'm slightly digressing here into how we condition athletes for their sport, rather than how we rehabilitate patients from from injury. And actually, Sarah sent in a question saying, does all this mean that there isn't a place for hands on therapy any longer?

Eyal Lederman 36:32

And no, no, that's, that's a problem that people misunderstand it. This is rehabilitation, rehabilitation of movement to functionality. Hands on is really important. I use it a lot in clinic. Basically, I work everyday with my hands on the patients, but I do a lot of anti free stuff with them. I might show that later, we will have maybe a demonstration what it might look like. And just makes it a lot more interesting than just doing passive techniques all the time. There's a range and yeah, no, it's it's incorrect to think like that. Right? It's an it's a question that often comes up. But, for example, even if we look at the repair process, and the initial part would be would benefit a lot for movement, even passive movement techniques that are associated with pumping of tissues. Yes, so intermittent compression and all

Steven Bruce 37:23

that will be very useful is that contribute to I think what you call Meccano transduction in

Eyal Lederman 37:27

the soul. So in, okay, so the mechanism that we try to activate in the initial part of the inflammation and regeneration, er to do with pump systems. And that's the Translate novel pump, which is the pump system within the joints. Yes. And there was another pump, which people are not aware of, it's the interstitial pump. In the interstitial space is like a sponge, it's compressible, so you can actually pump it. So when we move we pump both from the interstitial pump and the psychological pump. When you get to the field phase, and remodelling modelling, the candidate introduction takes over. That's an important mechanism we're trying to activate, okay, any kind of transaction is the building ability to convert mechanical signals into biological processes, right? Yes. Okay. So, all this,

all this modelling needs mechanotransduction it's not so much about pumping in the concern of your power unless there is swelling in daily is still the case, but you really want to move it to stimulate mechanotransduction. So the kind of seduction is offering is really, really important and people don't talk about it enough.

Steven Bruce 38:38

Just going back though, there's so no fuel pump is activate just by activating a joint yet and by moving your joint, whether active or passive. Here's an interstitial pump is effectively the the process of the muscles affecting the interstitial.

Eyal Lederman 38:50

Yeah, so it's muscle. It's breathing, it's movement, arterial pulsation, so it's very sensitive to being deformed in any way. So even if the pulsation will activate the pump system,

Steven Bruce 39:08

cautious creation, don't ask me how the computer gives people these names, has asked whether we could say a bit more whether you could say a bit more about the distinction between a full thickness tear and a rupture, which actually I introduced.

Eyal Lederman 39:21

Probably I don't know enough.

Steven Bruce 39:24

My understanding is that if you think of a tendon as a string rope, a full thickness tear means you could have a vertical or longitudinal cut. Okay, that was a Red Scare is a horizontal motion. That's how I look at it. We've talked about these things in the past

Eyal Lederman 39:41

Yeah, I can visualise. I can visualise Vilius structure. So

Steven Bruce 39:46

the full thickness tear is rehabbing. Well, but if it's completely ruptured, then someone's got to sew it together first.

Eyal Lederman 39:53

I don't know I have to think about it. Right. Okay.

Steven Bruce 39:57

Nick says Can we be a little bit more specific Think more detail on your examples with our training, maybe we can cope with it. Well, we're gonna get on to more examples, some examples. Some demonstration. Surely, Louise's as with how you would know that something was a small tear, or don't you care? So the fixable or not?

Eyal Lederman 40:16

Yes. You never know. So you're always careful. So always move within the image, especially with people with new injuries. Always work within the pain for you ages don't help your patient and then it cause some pain will be inevitable because you're touching sensitive tissues. But be careful not to inflict pain. That's really important. Right?

Steven Bruce 40:47

Yeah, it's interesting. I once in my very early days as an osteopath, I treated a champion I've been playing cricket with and he'd got suddenly sharp pain in his Achilles he heard a sound as though someone had hit him with a battery rupture. And I did the old gastroc Squeezy test and his foot did that's by the way, it can't be can't eruption people's?

Eyal Lederman 41:09

Yes, because there's only epic tenon and all the other stuff that

Steven Bruce 41:13

I didn't get him doing any exercise to rehab it. But yeah, I think I think I sent him off for an ultrasound or something. Yeah.

Eyal Lederman 41:22

I think it's the severity of the pain sometime. It's it can be disproportional to damage. So it's not very accurate. I think it's just well within the painfully ranges. And if there was a history of, you know, we'll tuama Falling downstairs or something like this, there was a lot of pain, send them off for an actually, MRI scan.

Steven Bruce 41:45

I've had a few like these that they've sent them was proven that it was flat children. And we're worried about being proven wrong when we send people away for scans. And we're but it's

completely the wrong way of looking at it. I mean, far, I'll be proven wrong than find that you hadn't scan somebody who did have a series. Absolutely. That's look sorry. Can you remember where we were when I digress?

Eyal Lederman 42:04

On the question of tails and the size of tails and so on. I was in a completely different place. Yeah, we were talking about transferability? Well, yeah. And so what you can do is you can you can abolish the need to rely on transfer by just doing the activity that you have time to recover. It's really that simple strategy between the similar activity is well, unpredictable, and small in effect. So what does it mean dissimilar activities? Yeah, so why use it? Just know what we don't use this similarity principle? Training? Yeah. Okay. What's coming up? Okay, so do you want to ask me anything before we go? No, no? No, we need we need to construct the patient. This, by the way, if you if we go back, one. And the bottom that we have with a functional rehabilitation, is that you can't monetize. You can't monetize it really well. Because the patient comes to you, they can't work and you say, well just walk. And please pay me 50 pounds or 70 pounds or whatever your child, it's not going to happen. Yeah, so it's not in the exercise itself, where the skill is important. But the around is all this is a skill of management when to do one thing when to move from passive to active when to active, which is a extra function like audit, to more functional movement and so on how what are the time periods? What are you looking for? So there's there's a huge that's why there's a book though, because it's it's there's a huge science behind it. And, and a skill to be learned that we are not teaching in osteopathy, which is really important.

Steven Bruce 43:48

And we weren't, we weren't talking about chiropractors, because we don't know what they get taught. And I would

Eyal Lederman 43:53

imagine fairly much the same. Yeah. So yeah. So that's the problem that we have with their function. So I mean, generally speaking, we tend to value a exercise that the more outlandish we are, wow, that's the new exercise in town kind of walk through the chrome plating

Steven Bruce 44:17

because it makes us feel clever, and it makes the patient think we're clever as well come up with it.

Eyal Lederman 44:23

But it's not necessarily really helpful. So in order to construct a function size, and it relies on a functional management, which is patient centred around the functional activities, and something called a process approach, which is the recovery process. It's focusing on the recovery processes in the tissues. It will all become clear in a second. Okay. But so what is functional movement? First of all, it's the unique movement repertoire of an individual and that can We share the activities we all

walk, we all go up and down stairs, or you need, you do manipulation. You want meditation, Satan. So it aims to, rather than invent something new for the patient. It takes something they already know. They don't have to learn it. They know they have to study. And if you think about it, why would you want to teach somebody? When they're in pain or in distress, something new, they're not in a learning mode anyway. That's why they get it wrong, probably.

Steven Bruce 45:30

But of course, if they're in pain, let's say let's say the knee pain, and they need to get back to walking. You tell them to walk, they won't walk naturally, because they will be intelligent in some way.

Eyal Lederman 45:40

Yeah, yeah. It depends on when again, there was a scaling the management. Yeah. So I might go into non expert wants to know right now. So that's a functional limitation, we are using the functionality, the repertoire. The other exercises that are functional, which means that they're outside the person's experience. Okay. And that's most of rehabilitation. That's the problem with rehabilitation. It's mostly extra standard rehabilitation,

Steven Bruce 46:05

or extra functional, you mean by going to the gym and doing bench presses?

Eyal Lederman 46:10

Because it's not something that they've experienced before you're sending them to do activities that are unfamiliar? Yeah. Okay. Right. And that goes to the shield here. And the unique activity is basically with a tennis player. It was a lot of, you know, carrying things than playing tennis and escalating the tennis. Again, that's the management pound. Okay.

Steven Bruce 46:35

There's a lot of women watching, you probably think you're being optimistic. If you think vacuum cleaning is a shared activity. No, probably say it's only Well,

Eyal Lederman 46:41

it's something that might consider, but it's just pissed off off. We need to talk to clear about this. Yes. And, and then the big question is, which human activity is not an exercise? Yes. And when you think about it, well, actually, everything you do is an exercise unless you rest. So if everything is an exercise, then let's use it as an exercise rather than trying to invent every time. This is I'll run through the slides really quickly. But this is kind of symbolises this, this kind of thinking

Steven Bruce 47:23

escalators into the fitness. So

Eyal Lederman 47:27

yes, you can have a choice of going up or down the escalators or god forbid, to walk up and down. So there's kind of a double idle name that I think, because once you're in the gym, then you do this step exercise. And in fact, when you think about the gym, it's really curious, because it kind of emulates what we do anyway. It's the machine walking, cycling, walking on a treadmill running on a treadmill, lifting stuff from one part of the gym to another. Yes, are two different types. Basically, what you do, you know, if you need homework, or housework and so on, and then people might think not the artist, not, the ordinary people will send the patient that, you know, if they've been stills that may be really dangerous for them, they'll get arthritis if they did 20, or sales or something like that, and so on. And yet, it's a fantastic enhances, enhances the health and functionality for you know, if you want to use your legs, in the walking and so on. And so this is exercise when it's a shiny machine. But it's not an exercise if it's a work, which is yes, and this is definitely not an exercise, push. It's just a woman struggling up a hill can't be exercise, and so on and so forth. And then you've got to ask yourself the question, when this person finishes the day's work, or she finishes her day's activities, do they need to do an exercise? The answer is probably no. But because they feel guilty, they might go and exercise because that's what we've been told. We haven't set the maximum and the minimum for humans. We are still we have some ideas of half an hour walk five times a week and so on. But we didn't set it in any great way.

Steven Bruce 49:18

Is it possible to come up with a I think so yeah,

Eyal Lederman 49:21

kind of a general, you know, milestone for people to know if they're doing too much because we never know how much to do. So we tend to do more and more and more

Steven Bruce 49:31

10,000 Steps important.

Eyal Lederman 49:34

I think because it gives people the focus. Otherwise, it's again, it's not tangible, what am I waiting for? And that tend to change. So now they say they're under the age of 60. You need to do between six, eight to 1000 steps. So eight to 10,000 and below, above 60. You can get away with 6000 to 10,000, something like that. So it's manageable also, for most bagel Okay, which one is exercising, which is a work? You've welcomed clinic, you leave, twist, shove, flow around the room, pounce on them.

Steven Bruce 50:18

But he would argue that he won't get a six pack during that. And that's what he wants. He wants aesthetics.

Eyal Lederman 50:23

Yeah, so strength and conditioning, that's where it comes from health and beauty and wellness. Yeah. But for rehabilitation, it's a dubious tool, I think it will work.

Steven Bruce 50:36

I think there's a risk of upsetting a lot of people in here, there's certainly a purpose in going to the gym for a lot of people, a lot of people there who are trying to lose weight, and they might be better ways of losing weight, we won't get into that topic on its own right. But there are certainly people there who are trying to make muscles bigger and more visible. Those look good on the beach,

Eyal Lederman 50:54

and they end they ended, they get the health benefits of exercising. And I'm not saying it's bad. I'm just saying it's, we transfer the locus of health, for most people out of the leech, basically, or out of something they are motivated to do. And then we wonder why they don't do it. And they fail to the exercise. And

Steven Bruce 51:14

so I don't know if this is the right point, would you care to demonstrate them what you might do to a patient in order to rehabilitate them which is functional, rather than extra functional?

Eyal Lederman 51:27

So do you want to do it now, shall we let me finish this one? I think it will. So this is good weight when it's so shopping is really, really good way of exercising your back. So most patients, I tell them what with shoulder problems or any other problem leg problems even use weights, if you want to use weights and increased force, if that's the aim, do it functionally carry stuff, it's really good because you might be carrying stuff for 15 minutes without being aware that you're doing exercise where every 15 minutes in the gym is going to be hard work and boredom sets in really quickly.

Steven Bruce 52:05

But is that 15 minutes in the gym, then more efficient than walking for 20 minutes,

Eyal Lederman 52:09

I think I've got a slide on that. Interestingly, children with back pain, it was long believed that it's backpacks, that's the problem that they cause back pain. And actually, nobody has ever been able to show any kind of postural or biomechanical causes or low back pain in children. And they think it's largely a psychosocial effects that are responsible for that, because they can't find anything. Physical laying that way. Interesting. So what it means is that the next time your kid goes to school, what you do is you bucket with bricks, a lot of bricks, and send them to school, because that's the only time they might be exercising during the day. It's absolutely safe.

Steven Bruce 52:56

I mean, school books would probably be a more constructive way. But wait,

Eyal Lederman 52:59

yeah, wait, do you want to wait down it's not it's not negative. So they might get fatigued and achy, which is fine, because you'll exercise, exercising but to them. Anyway, let's move on. And then we That's me, by the way, I'm doing my back. And 1000s and 1000s of schools being wheeled in this position for a couple of days, no problem bending completely the wrong way. So we tell our patients don't go into like that. And then we send them to the to do yoga classes and bend like that as if one is better than the other. So there's all these kind of paradoxes that we create with exercise. And the question is, if we give people their functional activities, you know, are they enough to load the body sufficiently to stimulate health and tissue length and whatever. So you can see the spinal loading in relation to standing walking is 171 times your body weight. So 1.7 times your body weight going through your back, going up and down stairs, two and a half. So two and a half times your body weight is going through your spine, that's a lot of force, you'll have to work out in the gym to get that actually. So if you don't feel it, because it's natural for you, it's comfortable. And it's not something out of the ordinary. And, and we know that things like if you want to work with chronic low back pain, all these exercise backs exercise, and I'll know better than 30 minutes, walk a day for five days, the minimum walking distance that people should walk anyway.

Steven Bruce 54:34

So after 30 minutes in one go, we're going to be to 15 minutes you can

Eyal Lederman 54:37

do you can break it up any way you want. As long as you move it's very, very important. So it's not so what you can do, you can look at it from as a choice. So the patient, you can say to the patient look, I can give you all this fantastic exercise. Or you can just walk it off, what would you prefer? And just leave it at that. Most of them just don't have the time for death. They might want to look at one or two exercise that because they believe they build the belief system more than anything else.

Steven Bruce 55:06

Yeah, I was gonna say if you phrased it that way, they would probably say, well, I'll go to another practitioner who will give me some exercise.

Eyal Lederman 55:13

You could do, but it doesn't happen, actually, really, yeah, it doesn't have that. You give them the choice and explain to them why they thought exercise is good for the back. And that's what the show research has shown. It's your choice, what you prefer to do. And if there is no shares, it's the same, then they'll go for the most obvious one, which is what they know. And it's easy to, to weave into the daily routines. This will require extra time going out of your way, big time. This is nothing just increase your walking from one station to another, and so on and so forth.

Steven Bruce 55:46

Are you a believer in sit to stand desks for offices or even some people who have treadmills at their computer,

Eyal Lederman 55:53

er, it's probably better than prolonged seating, which we know is detrimental to health. And our problem with standing. And that is people are not aware that within 45 minutes of standing, even people without back problems can get back pain. And that's probably pain or fatigue. So it can be quite fatiguing to snooze for also following along. So I think probably a mixture of the two, the most important thing is move away. Yeah, people are moving going up the stairs, put the phone on the table, further away from you. So you have to get up and walk to that phone, and so on and so forth. Okay,

Steven Bruce 56:31

just a quick word for the audience. Because we've had a number of people say we can't see the slides very well, because we know you can't see the slides terribly well at the moment. But we don't want to hide behind a full screen PowerPoint presentation, you will get the handout tomorrow, I will send them through. So you'll be able to read these things. I mean, the important thing is in most of these AORs contrasting, going off and balancing on a Swiss ball with doing some ordinary walking. And the stuff at the bottom is the detailed references which of course, you'll be able to read on the on the handout when we send it out. So please don't worry about that at the moment. So AI says that counts.

Eyal Lederman 57:06

And this is what I wanted to show you actually when the loading of the knee in daily in sports activities, there was a spelling mistake which which you won't see because you have it on the screen. But if you look at the vertical bar, you just don't need to even to read it. But it's the force times the body weight. times body weight going from the knee, single knee in each activity. So if you go if you stand on one leg, it's between two to two and a half times your body weight. A seat to stand it's

about two to two and a half times your body weights and to see it walking. Roughly the same are going up and down stairs, look at that it goes up to about three, downstairs even more. So. treadmill, golf, tennis, golf. Yeah, because of you. Stepping forward when twisting something huge force is going to pull the tennis the same. But then look at the what happen if you send someone to the gym, if you do a leg press pushing one time your body weight that's less than going up and down stairs, you might as well just go up and down stairs a few times and forget about that exercise in the gym. And that's all this all gene exercise. Elliptical Trainer knee extension, you know, the old thing is strength building for the knee fix of your body weight going through the knee of weight. That doesn't that doesn't give you the same as going up and down stairs. Yeah, that's, that's, that's quite extraordinary. Yeah. Yeah. And this isn't the shoulder again, I'll just give you one just one of them. A combing your hair, something we haven't done for a long time. It can be anywhere from half your body weight going through the shoulder to full body weight going through the shoulder depends on what you get us and how long your hair is. Anyway. There's logic there doesn't it doesn't but we will think about it all the twisting and you know the combined movements and the forces. It's tremendous. So stick

Steven Bruce 59:09

to lifting a coffeepot.

Eyal Lederman 59:12

Yeah, you can see it's quite a bit first going through one of the one time your bodyweight so that's as if someone took you by your ankles, raise you and then planted you in the ground on your shoulder with your whole bodyweight going through the shoulder. Those are the forces that are going and these are the muscles these are the forces that the muscles have to also support and move and so on. So this

Steven Bruce 59:31

is definitive proof that coffee is good for you. Yeah, yeah.

Eyal Lederman 59:37

But that's gonna be also the coffee pot. They make the distinction. And anyway, this is a to answer some of the questions about the health value of exercise. Because they say if you go to if you don't go to the gym, you're not exercising you there is no health value in daily activities. So this is what it shows you. So if you look these are the topics It is minutes per week. So 160 minutes 750. And so on the top 3000. And if you look at the vertical column, this is how much the risk of cardiovascular events reduces. So from one to 9.9 is 10% 20% 30%. That's how it worked out kind of thing. And this is in 150,000, individuals from all over the world, it's was in The Lancet, it's a global study. And you can see that the more you do daily activities, physical daily activities, non recreational physical activities, like walking to work, cycling to well, being at work going up and down stairs, and so on, there was a health value, okay, which is not very far from this one. This is going to the gym and doing moderate sports activities, right. And you can see the same deal at about 158. But then it begins to

creep up. And even when it passes that one, you might be also in the danger zone, getting heart attack.

Steven Bruce 1:01:05

So your risk from here is going down from one to something like naught point seven, dropped, and then he's going back up again.

Eyal Lederman 1:01:12

So you're really safe. And it's beneficial to be active throughout the day. But there might be this kind of U shaped response, which you don't see necessarily not studies, but this is a big study. And that kind of. So it's not a matter that you mustn't do that. But there is a difference between doing recreational activities and non vacation activities. And it's really good for you because it's all human activities exercise, basically, the body doesn't know any different

Steven Bruce 1:01:43

in the UK.

Eyal Lederman 1:01:48

Okay, so when I

Steven Bruce 1:01:50

say right, these are the three phases that you talked about in terms of,

Eyal Lederman 1:01:53

I'm just wondering if I should

Steven Bruce 1:01:56

show maybe something be a great idea, because I'm just thinking about time. Yeah. So my Okay, yeah. All right. So this would be another lecture. Yeah. And this is the process approach is that there's the repair, there's adaptation, which lead to pain and symptom relief. And then there's alleviation of the symptoms through other processes, it's like, and basically is covered in

Eyal Lederman 1:02:16

several articles that I've written now, you can also download them from our website. So there's no problem. They can have a look at it later. Okay. Okay. But it's essential to identify the process by

which the person is going to get better. And these are the three processes, we've routed, it's very difficult to then devise.

Steven Bruce 1:02:33

Oh, I see the application. Right. I thought they will work in conjunction with each other.

Eyal Lederman 1:02:38

No, no, no, actually, they need different environments, right to stimulate them. Okay. Okay. But like I said, that could be also another document of time. Let's go

Steven Bruce 1:02:47

and talk to our long suffering model, Jack. Okay, Jack,

Eyal Lederman 1:02:50

are you now glued to the chair? Okay, so imagine that, this, this is a situation where we had someone with a frozen shoulder, and it's not painful anymore, but he's reached this level, he's trying to raise his arm up, what do I do? Do I give him this exercise? Hold the bottle and do a 50 Cal bicep curls or something like this? Okay. Oh, I can do something more functional. I can say to him, okay, can you reach for this bottle, okay, and pass it to me over here and pass it to me over here. And let me let me take it around, but you have to use your left arm, okay, and pass it and pass it. And what I'm doing is I'm challenging his range of movement. By doing a functional task, he recognises something else he needs to do. That's what he's trying to recover. Okay, so these

Steven Bruce 1:03:46

end up taking him to where the limits of his pain

Eyal Lederman 1:03:50

that's likely. Now, again, I didn't talk about process approach yet, but you're not worried about chronic pain and injury. So there's the pain of it can design a pain into two areas of pain of injury, and pain of sensitivity. So pain of injury, you need to be very aware of the pain limits. In chronic pain, the tissues are intact, usually just think about something like Achilles tendinosis, which is a very chronic problem, you can still plan on it and jump and do whatever you want. Because it's fully intact, but it's sensitive. Okay, so here, I can tease it a little bit more than I can go slightly into the pain, I'm not going to help him and it's going to be within what he considered to be a tolerable level. Okay, so, which so this is week two, week three, week four, week five, week six, and I'm now working on joints, also the different components that I'm working on in the movement. Okay, so this is insurance. Now I can take away the insurance element of it, reach. Now he rests See, which is the weight of the bottle important. So I can also modify the force. So eventually I can make a bigger

bottle, and so on and so forth. And then you can do weird and wonderful things you can get into this movement is limited. Okay, each and pass it to me over here, which preceded me over here. And then I can stand behind him. And basically, I'm challenging all the movements that I can see he can't do. But I'm doing it functionally as if he's reaching for his belt in the car and so on. Yes. So rather than giving them you know, straight arm switches along the wall and all that, let me think the fact.

Steven Bruce 1:05:40

And so for a woman who presumably wants to be able to do an undo Yala, we'd be taking it down. So

Eyal Lederman 1:05:46

what you can do is, if you stand, I don't know if they will be able to see you. You stand will turn him around, if you stand. Up, okay, can you see he's back this. Okay? We'll do it with this arm. So I tap the back and pass it to me over here. Grab and pass it to me over here. Okay, grab and pass it to me over here. Okay, grab it, and toss it to me over here. So we'll do a lot of those. And we can do it in different parts of the back. So this kind of reaching is like pulling into houses up here. But this kind of twitching is maybe more of a like, behind your back. And this switching is something completely different. So what you do is you go through the whole ranges we want you see something that's limited, you kind of challenge it, but you'd like to do it with something with his movements, rather than forcing it the rest place also for manual stretching. But that's for another time. Okay, okay, yeah. Now, if you sit down again. Because all we can use this the same movement, also to rehabilitate the knee in some way. So for example, if I asked, let's say he has a problem with his knee, he is having trouble flexing it and strength. Let's say this is sometime after the knee surgery, and he is safe to load it. If I put the bottle up, and I say to him, Can you wait for the bottle and get up? Okay, and have a seat again, let me have the bottle, what I can do is can you reach and get up. So now he's putting a lot more force through his legs. So rather than give me an instruction, put your foot in this position, make sure that you to enter this muscle, don't bend don't do that do this and do that. Just giving a simple task and external focus of attention is forget it they forget about the joints and muscles, because they become focused on the movement is the goal of the movement.

Steven Bruce 1:07:48

So Sarah has asked would you do this during an appointment in clinic? Or would you just demonstrate a little bit of making go into it at home?

Eyal Lederman 1:07:55

Yes, yeah. Yeah.

Steven Bruce 1:07:57

What you're doing now he needs someone to help him

Eyal Lederman 1:07:59

because not necessarily he can. You know, like the example I gave of the woman who was like cooking. Basically, I told her to do a lot of this MX, what you tell them is to favour the affected arm in all daily activities. Yes. Okay. So almost put the other one in the pocket and try to do as much movement with this one as possible. And during the day, you will cover those wages very easily.

Steven Bruce 1:08:22

Yeah, I guess the frozen shoulder patient is going to be frightened, or they're going to get back that horrible pain and pain that they get during the worst part?

Eyal Lederman 1:08:29

Well, you'll build it up slowly. And you explain to them that frozen shoulder is a condition where the capsule is fully intact. And the strength, the material strength of the shoulder is the same as the unaffected side. Yes, they can hang from a side of a cliff, it will be only it will only be painful, but it's not going to say what's the

Steven Bruce 1:08:49

mechanism of that pavement?

Eyal Lederman 1:08:53

Well, that's gonna be another another evening.

Steven Bruce 1:08:56

Right? But it's neurological. It's not?

Eyal Lederman 1:08:59

No, but they do have also a bit of like tendinosis in the capsule and some mixture of things probably.

Steven Bruce 1:09:07

Okay. Right. So,

Eyal Lederman 1:09:10

so basically, that's what it looks like I've given them a functional task with me so they feel secure and then they can do it at home by themselves. Okay, they see that there is no danger we need.

Steven Bruce 1:09:20

And if you're going to rehabilitate his walking, now that he's got an injured knee, obviously you gotta tell him to walk. Absolutely. When you are building instability into that somehow as well to get preceptive balance rehab.

Eyal Lederman 1:09:34

Most of the time, you don't need to because people will rehabilitate the walking fairly fast. After surgery, it's very rare that you need to do that. And walking will also rehabilitate walking balance ability. What again, what people are not aware of is that balance is not transferable. Right. So if you parties balancing on one leg, it doesn't necessarily transfer to walking. That's a huge problem. Now, you want to do it both, you want to do it in standing for standing, and walking, for walking, and so on and so forth.

Steven Bruce 1:10:06

Right? Okay. So if balance is a problem, what would you have him do to? Okay? How would you make him functionally exercise that,

Eyal Lederman 1:10:15

okay, if you can do it in walking, for example, just say to the person walk a bit slowly. So if you get up and walk a bit slowly, so they're spending more time on each foot, okay, it's as simple as that. I don't know if they can see that. You know, there are hundreds of things you can do, you can you can put an object on the floor, this is not an object that's a pain or something, and then ask them to

Steven Bruce 1:10:44

do so we've got one handy at the moment. But imagine there's a pain on

Eyal Lederman 1:10:47

that, yeah, imagine that what you do is not you push it along with one foot. So what happened is they you give them a task, right. And they have to unknowingly, and unaware they have to balance. There's a whole range of things that you can do like walking in, from side to side, for example, that's a huge problem. The most important, the most important is walking in turning, because that's when people lose the balance. So you get them to walk around the table in one direction, and then turn suddenly and walk the other way. And practice that many, many times.

Steven Bruce 1:11:25

I was going to ask you about this because, of course, one of the one of the government's priorities is healthy ageing, one of the problems with ageing is people fall over a lot. That's why and so do you think you can help overcome that in the elderly? By doing the sort of training?

Eyal Lederman 1:11:39

This research says yes. I don't feel entirely comfortable. I think it's really difficult to rehabilitate balance. It's not as simple as people think. And then on one leg, and it will be fine. Okay, it takes a lot more than it takes away from the patient to practice something that they are afraid of doing, which is the big problem. Yes.

Steven Bruce 1:11:57

Yeah. So you have to build up confidence at the same time. Yeah, yeah. Are you done with Jack? Yeah, yeah. All right. We'll get back over there. Thank you, Jack.

We, we talked a bit earlier on about one of my other regulars on the show, Claire Minshaw, who is a strength and conditioning coach. And quite apart from its therapeutic benefit, she says that, if you are going to build strength, then you need to do it by doing five repetitions of whatever exercise it is to failure, up to 15 or so per week. So it's much, much fewer, far fewer than people would imagine. And of course, as part of what she's she tells us doing that exercise will also overcome pain. Jason has sent in a question saying, Would this functional training be as effective? Would it be able to get the same results as Claire Mitchell's strength training?

Eyal Lederman 1:12:57

I don't know. Because I've never put it against it. No, I can only tell you. So there is research on the knee, you compare the strength and conditioning basically, versus functional rehabilitation. And, and the end result was the same. But functionality return to do those who are functional. earlier. Yeah. And it costs a lot less to do. Because you don't have to teach anybody, they don't have to come to a special courses at the hospital.

Steven Bruce 1:13:29

Well, interestingly, when Claire's been on the show, I mean, she's been very keen to demonstrate that actually, for the average member of the public who doesn't want to be a champion power lifter, which she is what they can do this with shopping bags, so they can be standing with shopping bags, climbing steps, or stepping up and down with shopping bags.

Eyal Lederman 1:13:48

That's functional thing. And because if you think what do you need strength for? Well, you need strength to be able to get out of bed with your legs will look interesting. We are simulating it now. It's it's not a very good way of doing it. So getting out of bed, standing, walking, walking up and down stairs, and if you're a football, killing, kicking a ball. Now, why would you want to build muscles and beyond that? That would be a waste muscles are very energy wasteful? Yes. And it doesn't make any sense. You only need the strength for your functionality. The list is showmanship kind of

Steven Bruce 1:14:26

Yeah. Yeah. Claire my Claire has just sent in a comment saying that she's used the bottle exercise that you taught us ages ago with her patients and they love it. She also recommends unpacking the dishwasher and hanging out the washing to less domesticated patients. I have no idea who she's got in mind when she says I think it

Eyal Lederman 1:14:45

was a very thick hint.

Steven Bruce 1:14:49

It guarantees referrals from their partners apparently. Louis says our lose Louise's. We're getting off topic here slightly, Louise says what's the answer? Re adhesive capsulitis what causes it? I would call it frozen shoulder rather than a piece of captured.

Eyal Lederman 1:15:02

There is no adhesions there. I think ultimately, it's some kind of systemic autoimmune condition of some kind called causing acute and chronic inflammation. And the changes that we see it's very similar to do pitons. contractures, apparently. But we don't know. But it does happen to people who are more likely to happen to people who are diabetic people who have contractual Parkinson's, alcoholic alcoholism. So this can have some systemic cause, but it's not mechanical. burns itself out eventually.

Steven Bruce 1:15:45

It's interesting. It's still hard to come to terms with the fact that we just don't know why so many things happen in medicine. All we can try to do is find a way to overcome them as quickly as possible. It's like Larry says, he broke his fibula. Some years ago exercises were impossible. So we gave up and got on with living life as usual. He said he got dramatic improvement then and later that year climb Scafell Pike. So in his case, what you're saying makes no sense. And I've seen it many times what is the obstacle that is the is the obstacle in convincing practitioners that you don't need to do anything dramatic sexy or unusual in order to rehab patients? Or is the obstacle getting patients to believe that it's going to work? I think

Eyal Lederman 1:16:25

both. You want to inform your patients that they have choice? You put it this choice, that's the way to do it. You can do this or you can do that you'll get the same results and maybe even shorter time. Yeah, and teaching it's interesting regarding osteopath, where did they get the exercise advice in the first place? And where we do we kind of appropriated from other places don't we? It's not really ours. And so we want we went for as osteopath for the most obvious one is strength and conditioning because that's the most popular. And this is, what I'm doing here is an attempt to create something which is unique to osteopathy and a science that osteopathy

Steven Bruce 1:17:12

with chiropractors watching. Well,

Eyal Lederman 1:17:15

of course, they're all it's all inclusive, I don't care who does the rehabilitation, as long as the patient gets better, that's my interest. But yeah, I think there's a huge place for it. And someone else is going to develop it if we don't. That's the way I think I say, because it makes sense, then it's money is everything here. So big organisations like an NHS will eventually come to the conclusion that they might be better off.

Steven Bruce 1:17:42

No, the NHS will never come to a conclusion that something that saves money is good. It says it's probably going to fall apart before I want to go back to two adhesions, because we touched briefly on somebody who's been in a cast for six or eight weeks. You talk in in your book here about adhesions between fibres and between sarcomeres and so on occurring within 15 days. And and being really difficult to shift out into that

Eyal Lederman 1:18:14

in fact to within one week of immobilisation of an animal, an animal that's not even injured, they just immobilise the animal and you get a novel adhesion. So between the villi, so they can't expand. Right? So you can't move because it's a pain, pain sensitive tissue.

Steven Bruce 1:18:30

What do you do about it? Can you overcome it through functional excellence? Or would you just have to live with it and accept what

Eyal Lederman 1:18:37

people get better after being in a plaster cast. So it is reversible. And it's reversible. Also, in animal models. What we don't know which could be linear, by the way, if anybody in the crowd wants to do a PhD, please come to me. Of course, the lots of ideas for them,

Steven Bruce 1:18:53

I will pass on your contact details, just that reasonable. What would you what would you suggest that

Eyal Lederman 1:18:59

maybe it would be interesting to see what happens to adhesions in the long term? Do they become more extended since extendable? Or do they disappear? Why does a person recover the means of movement? And that also goes to frozen shoulder? And why do they regain the range of movement after a few months few years? Isn't because the capsule li moulds itself to the to the current activity and therefore there again, functionality? Oh, easy, because it's not sensitive anymore. But nobody's ever done that. And we've got quite easy to do in some way because you take a group of people who had MRI scans in the beginning and ask them to come back after a few years when they don't have it. Yeah, and see what comes with the capsule.

Steven Bruce 1:19:50

How does your approach to rehabilitation work with let's say disc prolapses or disc related problems.

Eyal Lederman 1:19:59

So This goes to this. When a patient comes to you, you have to ask yourself a really simple question. By which process is this going? Is this individual going to recover? If it's a flesh injury, like a disc injury, it's the repair process. So you'd then need to create an environment that supports the rebuild process. Right? Okay. And that repair being just over probably a large number of months to disk being surprisingly, they all blink talk, they talk about a full disk problem to begin functionality not to be absolutely painful in like new, but about four to eight weeks, that was obvious, because that's the time of the repair process. Most of it will, when this date time. The problem is that you have new damage, and that can prolong pain. But it's still within the inflammatory sphere, because it's going to repair process, even that lead time.

Steven Bruce 1:21:00

So at this stage, our clinical approaches we do whatever treatment is necessary to create that environment where the repairs can be most effective.

Eyal Lederman 1:21:08

Yeah, you got to move it. Move it. You got all you got to move in pump it. Yes. Right. That's the way to do it to the gym. Yep. Yeah. You play guitar, we can do something. No, I

Steven Bruce 1:21:20

have a guitar. Play guitar. You said earlier on, you get good at what you practice and why I'm not good at playing

Eyal Lederman 1:21:26

the banjo. That's why Yeah. But no, seriously, you want to get them to move. So even if they can take two steps. And stop, then you ask them to take two steps 10 Family Day and try to keep on moving? Yeah,

Steven Bruce 1:21:41

the adaptation part of the process.

Eyal Lederman 1:21:44

Adaptation is, let's say, a person has been immobilised in a plaster cast, and they've got the remodelling of the area, is in a kind of a negative state for functionality, because they lost the range of movement, muscle loss, motor control, losses, feel views, and all those kinds of things. For that, to reverse itself. It's not a repair process anymore. It's a adaptive process, which is both on by being active and more active than in the rebel phase.

Steven Bruce 1:22:14

Okay, and our role in this is encouraging that activity, that activity

Eyal Lederman 1:22:17

and you can start on the table, it's possible. So there's, there's, there's even a phase before what you saw now, where I form passive techniques, I move into a more active, so I'm kind of building it up for the patient. And then very quickly, it's off the table and doing things like that, because these clinics using the repair phase, and approaches are not going to be very effective in the adaptive adaptive phase of adaptive related conditions. alleviation of symptoms is basically, you know, if you take an MRI scan of your one of your patients who had pain for one year, and you took him retrieve them, and after a month, they get better and so on, you took another MRI scan of the back. Will you see any different? Any difference? And the answer is? Probably not. So the foliage is still there. So the question is, how did they get better if the pathology is still there, and that through a modulation of their symptoms, so the body has the capacity to do that. And it's a physiological good thing. And I'm saying that because quite often in osteopathy, we don't want to tweet symptoms we only to people, but that's what nature does. Anyway, it does queuing any does modulating so why not use it?

Steven Bruce 1:23:33

Can I ask a couple of quick quick questions before we close? Kim has said Does the approach you've outlined help with patients suffering from Parkinson's? She learned today that the husband of a patient who has Parkinson's was taught to exercise. So I think the husband has the Parkinson's was taught to exercise he can run but finds it difficult to walk. He was told the action for running comes from a different part of the brain and the action for walking. Do you have

Eyal Lederman 1:23:57

any I think that's that's the case. I don't have experience working with Parkinson's I had experience with stroke patients. Right. And like people like Lloyd that had their head injury. Yes. So there's been a couple of really important I just don't know enough about Parkinson. Okay,

Steven Bruce 1:24:14

you did when I remember I came to one of your courses and you were talking about choosing the stroke patients. You made a really interesting point that the NHS gives up on stroke patients after I think 18 months but there's no evidence to say that they can stop rehabilitating after their time which is

Eyal Lederman 1:24:29

just it just gets harder and harder. Yeah, yeah.

Steven Bruce 1:24:33

But again, that's that's a subject for another course or another another discussion on how you rehabilitate so definitely

Eyal Lederman 1:24:39

a all a all. So conditions, neurological conditions will get better only by adaptive processes. Right. Okay, but what you're hoping this if they forgot the central degenerative processes, the Dell slow enough to go undergo adaptation. They don't know too fast. So the allocation doesn't catch up in a way, there's no recovery potential.

Steven Bruce 1:25:07

And, again, we're coming to the end, I have mentioned your book a couple of times, because it's new off that it's hot off the press. And it would be remiss of me not to talk about it. But if I can give it one more gentle plug, but I do like about all your books, because they're very readable. Yes, you've got the references in there, and so on. But it's a very straightforward approach. There's very simple

explanation of the repair process of the the this process approach to rehab, and everything else. So I really enjoyed reading that I'm gonna say, one thing I want to bring up, I've been told this isn't a question, but it's such a great idea that Claire wanted to share with us cancers with her older patients, she started to build in strength training in inverted commas, which is functional as in practising getting off the floor in different ways. She's decided that formals, we cannot prevent with respect to balance issues in the elderly clients, as they can be very varied where they fall. So we can't protect prevent them, but we can give them the skills to get back up.

Eyal Lederman 1:26:03

I think I will, I do have the flow exercise. I'm 64. I don't have a problem yet. But don't a practice getting on the floor and getting up as part of my routine, because I am willing that eventually this is going to be lost. And that's a huge

Steven Bruce 1:26:17

Friday in the pub.

Eyal Lederman 1:26:20

But she's doing the right thing. Absolutely. Yeah, it's really important.

Steven Bruce 1:26:26

We've had just over 400 people watching this evening, so I'm hoping that they've enjoyed the show as much as I have. And I imagine that people are going to find this really reassuring, because for all of my career as an osteopath, I've always thought, I don't know which one of these complicated exercises I should be giving to my back patients, I don't know whether the Superman is going to be more effective than downward dogs or cats that stretches or anything else. This seems to me like a much more reassuring approach, because we all know what people need to do in order to maintain function. Yeah. First of all need to buy your book, obviously.

Eyal Lederman 1:27:01

Yes. There is a course also later in the year, I think. A one day course.

Steven Bruce 1:27:11

Will people gain something from that that they haven't gained from just listening to, you know, via

Eyal Lederman 1:27:15

basically, how to construct the whole thing, how to put it together and right. That's, that's where the skill lies. Yeah, there is no skill in telling people to walk, but is a skill to tell them when they should do it after the injury, what and how to develop it further.

Steven Bruce 1:27:33

You cover those on the treatment table exercises that I remember you demonstrating years ago, we're here and you're challenging,

Eyal Lederman 1:27:38

less, less. So in this, this is more about exercise. There is a new mask locals. That's another thing that they gave us the other day, which is a super thick neuromuscular rehabilitation. Yes. So probably wouldn't be running this course sometime next year, I would imagine, right?

Steven Bruce 1:27:57

Well, we'll see if we get any, any support from people who'd like you to run a course here rather than in? They'd like to come here, then we'll certainly let you know. Thank you very much.

Eyal Lederman 1:28:06

Well, thank you very much and great pleasure. And thank you for introducing me. Well, no,

Steven Bruce 1:28:10

no, it's been my pleasure. And so yeah, and that's it. We are up against the clock as always