Academy of PHYSICAL MEDICINE

Transcript

Clinical Exercise Prescription
With Matt Wallden

Cast List

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APM- And now I'm joined yet again by Matt Wallden. Matt probably needs no introduction by now. He is an associate editor at the Journal of Bodywork and Movement Therapy where his specialist area is rehabilitation. He's gonna be talking to us about clinical prescription or exercises, which is something personally I feel has always been lacking here and I suspect I speak for quite a number of osteopaths and perhaps some of the chiropractic audience as well, but I know that this is something very dear to Matt's heart, something which he's gonna help us out with enormously. We're going to be talking about the neurophysiology. We're gonna be demonstrating a practical application of what he has to do, and it's a great pleasure to welcome Matt back to the studio again.

MW- Thank you very much.

APM- Matt, so what's your background in this? How come you're a specialist in clinical exercise prescription if I can put it that way?

MW- Okay, well so I was always interested in exercise as I was training as an osteopath, and I did both of my theses on exercise based topics, so I did a BSE obviously for the undergraduate. Then I did a post graduate master's and so I was digging into the exercise a fair bit with those two projects, and then I

saw a guy speaking called Paul Chek in 1997 when I qualified, and was just very impressed with his command of the exercise literature and exercise physiology and so on.

APM- And this Paul Chek is the man behind the C.H.E.K. institute?

MW- That's right.

APM- C-H-E-K?

MW- Correct, correct yes. So, when I saw that he was coming to the UK 2001, I booked onto his seminars, and again was suitably impressed that I bought several of his materials and went into their training program which is a four year training program through 2005. And so, within that, you know the sort of philosophies behind it were very osteopathic and naturopathic, but there was a lot more on the exercise side than I'd been exposed to in my original trainings.

APM- What's the aim of the training, at the end of it, what do you feel you're better qualified to do?

MW- Well, I sometimes explain it as simplistically as a bridge between really the therapy world, manual therapies and the personal training or strength conditioning worlds, so it kinda bridges that gap. And so, for me that was perfect because it was what I was interested in and it was what I, the kind of field I wanted to work in as well. So, I always wanted to work in professional sports.

APM- I was speaking very personally earlier on when I said I feel that I am under equipped to describe exercises to my patients, and of course I've got the stock exercises

MW- Yeah.

APM- that we prescribe. You came up with a saying earlier on that there's no bad exercise prescribed.

MW- Only badly prescribed exercises.

APM- Right, meaning an exercise prescribed for the wrong reasons.

MW- Well, you a good example would be something like a sit up, and a sit up can be something that can be beneficial if you need to sit up from the ground, but for a lot of people doing a sit up because you're laying flat on the ground, you're contracting the abdominal musculature in front of the mid frontal plane, so essentially you're moving in front of the mid frontal plane and then going back to the mid frontal plane. So, what you're doing is you're training

the muscle to be strong in a shortened range of motion. So, essentially what that does is it tends to compound a kind of rounded thoracic cage and fort head posture. So, a sit up for most people actually isn't likely to be a particularly good exercise, but someone who's a boxer for example, who actually needs to round forwards and to protect themselves, a sit up's perfect. So, that's an example of where, you know, for the majority of people a sit up in a standard format is probably not the best exercise, but you can't say it's a terrible exercise across the board because there are certain people that would benefit.

APM- Some form of sit up is probably fundamentally, in terms of core stability training, which I know we've talked about before.

MW- It is. It is obviously to get out of bed in the morning. Most people need to do one sit up per day to get out of bed, and maybe a couple more, depending on how they rest and so on, but in general, yeah, it's kind of the best known version of core exercise is the sit up, but it probably isn't much prescribed by people that work with core stability in their practices.

APM- This is going to sound like a stupid question, but maybe we need to because you've got such a background in research maybe we need to sort of find out what the facts are behind it. How important is the exercise component of fixing a patient with back pain, neck pain?

MW- Yes, yeah and I you know, I think it is important. So, back to the original osteopathic training philosophies and one of the thing that I noticed was that there was quite a focus on passive structures i.e. joints in particular. Obviously some focus on the muscles as well and how you can work with those, stretch them and massage them and so on. But, not so much focus on the nervous system, and what's actually controlling those muscles and joints. So, you know the notion to manipulate a joints is you know, the key treatment that a patient may need. If you're thinking back to original causes then it's unlikely that the joint, well joints just can't get tight on their own in my view. I know there's various theories as to how maybe a meniscus can get suctioned between menisci and so on, but my feeling is that a lot of the tight joints I was treating with my osteopathic hat on were tight because the muscles overlying them were tight because they were being over recruited for some reason, with that sustability issue or some kind of muscle imbalance or postural issue.

APM- Lots of us would probably argue, and I'm not saying I'm one of them.

MW- Yeah, yeah.

APM- That actually the muscles are tight because the joint is restricted.

MW- Yeah.

APM- And it's a response to the injury, the insult.

MW- I've heard that and I think, I think so, you can get muscle spasms as a result of joint pain. I wouldn't deny that, but you know, you have to look at a skeleton, you know? I presented this at a symposium just recently. I had a picture of Cedric, my skeleton that I bought in 1993 when I first started training, and I was saying, you know, he's been standing like that for 30, well not quite 30, 24 years 25 years now, and he doesn't have any joint restrictions, and the reason he doesn't is cause he doesn't have any muscles and he doesn't have a nervous system. You know? And, so that's I think hopefully, and you know Gracovetsky put it an interesting way. Where he said that, you know if you were to put a bullet to someone's head, or through someone's head, then because the nervous system is gone then you have no joint stability what so, you know the whole thing just collapses. And so he kind of points the premisy of the nervous system.

APM- Who's Gracovetsky?

MW- He's the guy that wrote

APM- He is some KGB hitman or

MW- No, no he sounds like it. He's the guy who wrote The Spinal Engine.

APM- Right.

MW- Yeah, so he's Gracovetsky. So, you know quite an interesting guy, but

APM- Sounds like his research methods are a bit questionable to be quite honest.

MW- He's actually a nuclear physicist by original training, but he ended up with bad enough back pain that he looked into back mechanics himself, and ended up writing this book, The Spinal Engine.

APM- So talk us through then, what are the aspects, what are the elements in scientific terms behind what it is we're gonna talk about this evening.

MW- So, I wanted to focus a little bit around an article that I wrote called Facilitating Change Through Active Rehabilitation Techniques. That's it. I wrote it in 2013 and it's,

APM- This is in the Journal of Movement, Bodywork and Movement Therapies.

MW- It is, yeah. So what I'd done, was I'd just really taken some time to think well, what's the logical sequence to work through in terms of the different tools that we have as manual therapists, and you know I came up with is on the first slide here was this. So, you can see the list and on the right hand side of the slides, and so of course we start with an assessment and then what I would suggest is that the first thing that we want to consider is one of the adverse neurological inputs for that patient or client. So, you know that could be many different things. So, this is big field to consider as the first point of call, and it could be things like pain of course and it could things like inhibition often driven by pain or spasm often driven by pain and facilitation again, another similar to spasm, and it could be descending influences in terms of emotions, in terms of anxiety, pain catastrophising. Those kind of things, pain behaviors. So, there's many things and of then there's of course there's viscerosomatic reflexes as well. So, the reason I think you have to consider that first is that if you ignore that, and you go straight to trying to address the muscles, let's say, it's the nerves that control the muscles, so you are likely to be relatively unfruitful or to have various roadblocks to an optimal pathway. So, now of course in reality, these things are often done in parallel, you know so you could do adverse neurological inputs and the next one on the list is to improve length tension relationship, and so what I mean by that one is that in most cases, patients will have some kind of abhorrent posture or posture that is not what would be considered optimal from a load bearing perspective. So, someone with a ford head or with rounded shoulders or with increased thoracic curvature or too flat thoracic curvature, you know the whole thing, right the way up or down the chain. So, if we want to optimize the load sharing through the joints and the discs and so on, and to you know, not just the axial skeleton, but the peripheral skeleton as well. Then, what we want to do is to optimize the length tension relationships of the musculature holding those joints in place, and so to do that effectively, we've got to make sure there aren't any abhorrent or adverse neurological inputs, so that's hence being first on the list. Then we can start to go in with stretches and with corrective exercises to address these length tension relationships. Now, at that point you can then move on to working with the joints because as I suggested earlier, the joints are being controlled by the muscles, and so then we can, that's where our manual therapy comes in a lot of, into a lot of use. And of course we can still be using it for the prior two categories, so adverse neurological inputs, you know just a calming hand on the back or even you know a working diagnosis can be enough to reduce anxiety and to change the whole emotional component.

APM- The reassurance that you're not going to suffer from lower limb paralysis.

MW- Yes, yes. Exactly yeah yeah.

APM- Cause most patients do catastrophize this stuff don't they?

MW- Oh that's it, that's it yeah. So, that's an important aspect of the touch side of what we do manually, and obviously with the length tension relationships we can be involved with that with our hands in terms of stretching tight muscles or inhibiting muscles that facilitate that kind of thing. But then with the chronic joint adaptations, now we can really get into our, where we really specialize with our first mobilization and articulation and manipulation techniques, and so that's the sort of initial part of the process that I would recommend. Then, we could go into stability style exercises for one of a better term, motor control style exercises, and so that would really be the initial sort of part of the process, but again you wouldn't really want to go you know earlier in our webinars together we talked about the math of course, the ability and so on, and we were talking there about disrotomatic reflexes and how disrotomatic reflexes could inhibit the tonic fibers.

APM- Yeah.

MW- The trans abdominous for example and so again you could be giving exactly the right exercise, but if someone's got say you know constipation or irritable bowel syndrome or any visceral pathology that doesn't want to be compressed. Or you know is creating an affront drive. Then, you're gonna be relatively unsuccessful in activating that muscle.

APM- Yeah.

MW- So again, that's why we wanna go back to the top and make sure that we're addressing the adverse neurological inputs first and foremost.

APM- Yeah. We've had a couple of comments that have come in already, which is quite encouraging. They must like you because questions come in early on your board. The first one really is an observation from somebody who remains anonymous, but thanks for the question. My view regarding restricted joints being the issue, muscles responding was blown away when I saw a total knee replacement on video. Patient couldn't move his knee at all, put him under anesthetic and the surgeon lifted the leg and the knee was moving perfectly. And I can speak from personal experience there, and actually I found it was pain that was stopping me from moving the knee. It was manipulated under anesthetic which improved it a lot, but I guess there must have been some restrictions there as well from long term shortening of the muscles and tightening of the capsula tissues around it, but yeah memory is a good indication that the nervous system's controlling a lot of this stuff isn't it?

MW- Yes absolutely. It's the same with hip replacements as well isn't it.

APM- The other one here is coming from a chiropractor who is nameless I'm afraid. Apparently, his chiropractor loves rehabilitation exercises. It's what made them train to be a chiropractor after having a very positive experience with

their chiro at her gym, but having become rather despondent at exercise prescription due to the very poor patient compliance, so tends to give things that fit more into day to day life these days as per Ale Litterman, who we talked about a lot. What are your thoughts? Do you have problems with patient compliance yourself? And this may be a bit early to get into this, but,

MW- No, not at all. I mean, you know patient compliance is always a challenge with anything where you're giving them homework.

APM- Yes.

MW- And of course compliance tends to be better when there's pain present because obviously they want to get out of the pain, but this is why you know, in the C.H.E.K. system what we attempt to do is look beyond the pain and to look to longer goals, dreams, ambitions and potentially your legacy as well, you know, so what do you want your life's meaning to be? Or your life's purpose to be about? So there's, that's one way to go about it, to think in a much bigger picture version, and then to bring that back down to you know smaller goals but so the person sees it in context and that can help with compliance, but there's so many things that can compromise compliance. There's, yeah absolutely, if you can build it into activities of daily living, there's an interesting grid I've see, I've gotta try to remember how it goes, but basically you've got structured exercises, which is probably more what I tend to prescribe to my patients still.

APM- Structure meaning so you're meaning formal exercises like I don't know, it could be lunges or squats and that sort of stuff.

MW- Yeah it could be anything, anything on the floor or anything through the continuum, but it's a specific exercise for a specific number of repetitions, and you do it let's say three times a week, etc. So that's a structured and specific approach. But then you can get an unstructured and specific approach, and the unstructured specific approach is one example of this is what's called red dot therapy, and that's where you buy a packet of red dots and you stick them on your mobile phone and on your computer screen, on your toothbrush, on the kettle and every time you see the red dot, you think oh, no I must engage in this way or I must look at my posture or my breathing pattern. So the red dots, so it's kind of more random, it's nonspecific, but throughout your day, you're lucky to see these red dots around your environment and then so you build it in that way. So, those are specific structure and unstructured, but then you can have nonspecific and structured, and so probably an example of nonspecific actually would be something like posture, you know it's not that specific, you're not giving them a very specific range of motion to think through, to work through. You're asking to think about their posture, or their breathing pattern or whatever it may be that their gait pattern, they sleep walk, and yeah so basically with that grid, you can hopefully cater to most people's requirements. It doesn't

have to be red dots either, you can set a timer to ring down and remind you about how to sit or,

APM- Actually, the red dot sounds like it might be quite effective, I mean, do you think so? Have you tried it?

MW- Yeah, yeah it can be yeah. I mean you know, you really gotta see based on the patient profile whether or not that's gonna be, you know some people don't like the idea of sticking red dots around their home. So, then you might use something like a timer, so it's all about trying to create a program that's gonna work for that patient.

APM- Yeah. We're often fond, well we are fond of telling our patients to set a time on their computer and make 'em get up from their desk and just walk around the office.

MW- Yes. Exactly, and that would be an example of a nonspecific thing to do.

APM- But, so then we have the nonspecific, non structured.

MW- Nonspecific, yeah and non structures, yes, yeah. So, they might just be to say, you know you should walk more, so get out and walk through whatever.

APM- That's not gonna be effective though, is it? If you don't give people a specific, surely they're just not gonna do it.

MW- Yeah, well there are certain personality types that respond better to not being told exactly what to do and to have more freedom of flexibility, so you know you need to up your walking. I want you to aim to hit two hours a week. Doesn't matter when you do it, doesn't matter how you do it. So, that's kind of nonspecific and unstructured, but let's just get in two hours more per week, you know that kind of thing.

APM- Okay, so we interrupted you with some questions. Where do we get to in your range of things that we can be doing in clinic and what we should be doing in clinic.

MW- Well so, you know I think through that initial process of the first four things on the list there probably most osteopathic chiropractors are doing those kinds of things already to a greater or lesser degree. But, they may have areas where they could dig a little deeper. Like for example, viscerosomatic reflexes are often not particularly strongly addressed by manual therapists because we tend to be pushed more into the muscular skeletal column, so then you know, if someone has Irritable Bowel Syndrome we might think to say you should see a nutritionist or maybe try cutting out something basic

like gluton, but not in my experience not a huge number of manual therapists would know how to refer for a comprehensive digestive stool analysis and to, you know provide a kind of program based on that.

APM- Just out of curiosity, I don't know how to do that, how would you go about that?

MW- Well, there's a number of different providers. Obviously there's books that you can learn about this kind of thing, there's courses you can learn about it. So, I've been to a number of different CPD type of events and trainings.

APM- I just have this idea that we might not be running an online CPD 90 minutes on stool analysis. I'm not sure how well that would go down.

MW- But you know, there's plenty to do in 90 minutes. It's an in depth topic.

APM- Well maybe if it seems popular with the audience that maybe we'll talk about it.

MW- The thing is with stool analysis is gross as it sounds, you can get so much information about what's going on with the patient's digestion, which of course is so key to their overall health and to understand things about their immune function. You can understand things about their absorption and so on, there's many different factors, as well as whether or not their gut biome is optimal.

APM- Right.

MW- And so the biome is obviously is a big thing that is being talked about at the moment because of the realization that if your biome is out of balance it can disrupt blood sugar regulation. It can disrupt emotions, lead to depression, and interestingly enough depression is one of the key things that drives central sensitization that we've been talking about. So, again if you're not addressing the gut and someone's got a persistent or chronic pain issue, then you may be missing one of the key originators or,

APM- But fortunately there are drugs for blood sugar imbalance and depression and even for pain.

MW- That's true, that's true. So, you don't need to do anything, just pop a pill.

APM- We actually had a really interesting response from somebody, and I'm not surprised they're staying nameless for this, you see I found the golden bullet for building compliance with male patients is to always include hip thrust exercises cause if you tell 'em it will make them better lovers, they're much happier to do the exercise. Sounds like a scene from the Rocky Horror Show.

MW- It does, it does yeah.

APM- You heard it here.

MW- Yeah and you know that's a viable exercise for someone who has, who wants to flatten their back, but if you've got someone whose back is too flat or their pelvis is too posterior, then hip thrust exercises aren't ideal probably, or you can adapt them. So, you know when we're talking about this example of a hip thrust exercise. If you were to be laying on your back on the ground, and be thrusting the hips up into the air, if you've got a patient that's got a very flat back and posterior tilted pelvis then you probably think, well that's actually compounding the postural imbalance that they have, and because it's working the glutes primarily. So, that's gonna posteriorly tilt the pelvis further. But, what you can do is you can work the hip range of motion again behind the mid frontal plane. So, essentially what you're doing is you're dropping down to the ground, coming up but not quite reaching the point where you're straight where there's a straight line between the trunk and the hip and the femur. Then, what you're then doing is your the glutes, but you're training them in the outer range so you know this concept of inner and outer range is all about length tension relationships and actin myosin digitation so, if you've got the actin myosin and if that's in its optimal range like that. This is obviously is the inner range, that's the outer range, so if the person has a flat back and a posterior tilt, then the glutes are probably somewhat in the inner range.

APM- Yeah.

MW- If you train them in the outer range to get stronger out here, then body always migrates to the position, to the position of strength.

APM- Right.

MW- So, you can actually help to change their posture and you know that kind of postural pattern is more inclined to load this discs.

APM- And is training them in that outer range, is that gonna be something as simple as doing, I don't know, squats but not deep squats.

MW- So, with the squats it will be that you wouldn't come right to the top of the squat, because what you don't wanna do is squeeze the glutes and get that last bit of extension at the hip, and so yes absolutely, so you can just manipulate different exercises so that you can target either the inner range or the outer range of that muscles action to create a change in the way the muscle behaves.

APM- Yeah, okay. And a question here, which refers acute injury, and whoever it is says, is is recommended to introduce exercise into the acute stage of injuries such as whiplash?

MW- Okay, well so of course it depends how acute and how much inflammation is there and so on. It's certainly something that I would want to start to try to reintroduce movement, but not necessarily exercise if we can make a distinction between the two. So, what you want to do is to reestablish proprioception first and foremost and once you've done that to get activation of these deep intrinsic muscles, which essentially the muscles that give you proprioception alongside the mechanoreception in the joint. So, we had a illustration a couple of webinars back where we were looking at the multifidus the deep fibers of the multifidus have way more spindle cells that the superficial fibers, and that's because they're designed provide information. So, when you get a whiplash, of course you've got multifidus in the neck as well. If you were to get an interior impact so you stress the posterior musculature, then you would damage, would traumatize the spindle cells. You actually can explode the spindle cells in the whiplash situation. So, as the body heals you want to reawaken the nervous system to the spindle cells in the healing tissues in the multifidus, and of course it's those very deep fibers that are key, cause they have such a density and that helps oversee with proprioception and once you can establish proprioception then you can start to move into more gross movement because you can control the range of motion at the joints at that point.

APM- Yeah. Your slide goes on to talk about all sorts of things. Your power strength, hypertrophy and so on. Do you want to elaborate on those?

MW- Yeah, so that really is where you're probably moving more into the realm of traditionally a personal trainer or strength and conditioning coach. But, it's my sort of contention I suppose, or my belief that as therapists, we should either be working with these people and encouraging our patients to move through into a gym style environment. Again, obviously depending on their likely compliance in that environment, but I see that as a key part of the rehabilitation, but both to gettin' back to full strength but also so to minimize risk of reinjury, and so what I suggest is a process is that after getting these deep intrinsic muscles working, then we move to the more peripheral muscles which sometimes called outer unit muscles, more phasic. And, initially you start with probably endurance or strength endurance type parameters.

APM- Just for the sake of people who might not have seen the previous broadcast, just run through phasic tonic muscles again.

MW- Yeah, so tonic are the muscles that are deep and hold, they literally hold tons, so they're the ones that we're primarily using while we sat here. If we want to move and to walk off, then we use the bigger strap muscles, which

are more superficial, and they phase into action and they phase out of action. So, if you think of the hamstring and gaits, that's phasic.

APM- And previously, you said that in training those muscles, they require completely different approaches in terms of the time and frequency of activation.

MW- Absolutely yes. So, one of the challenges with some of the research designs for things like transverse, abdominous, or multifidus is that they're not hitting the right times under tension, so there's some quite simple muscle physiology that we can look at on a slide perhaps a bit later, and it's essentially showing that you have to hit three to five minutes of time under tension which is essentially work.

APM- Not continuously. It could be a mistake.

MW- Not necessarily continuously, but it's gotta be within a certain time frame, and so if you rest too much, then the tonic fibers recover and so whilst you've worked them out, you haven't actually metabolically stressed them yet. So, to create metabolic stress on tonic muscle fibers, you need about three to five minutes of work. So, practically all the studies on transverse abdominous are ten times ten seconds, so you're not getting close to three to five minutes. So, and then they report, this doesn't work or didn't work as well as we thought, etc, etc. And you think, well you know that's because the acute exercise variables were wrong.

APM- Shouldn't most personal trainers know that? Or is that not just something that's taught?

MW- This is, yes, it's not really taught that much. I think you know, it's one of those things that's coming in more so and obviously when I learned about it in sort of 2001, I didn't find anyone anywhere that was talking about it. But, this wasn't even then is wasn't new information. It'd been around for five or 10 years, so yeah you'd hope that was the case, but you know these physios and so on that are doing the research studies. They're obviously not aware of it because they're giving people 10 lots of 10.

APM- Which is almost sort of just a default position isn't it? We all think it's 10 lots of 10 seconds.

MW- Well, I always make the joke that if we were doing the research 100 years ago, then it'd be 12 lots of 12 because it's just purely the system that we live in is a metric one.

APM- We'll go back to that next year after March the 29th.

MW- Oh is that right?

APM- Once we leave the European union, we can go back to 12s again.

MW- Yes, yes, perfect. So, then the exercises will be more effective, and still not quite hitting the right range. Yeah.

APM- Can I just, there's an observation coming here reflecting what we were talking about earlier on. Again, I don't know who sent this in, but personally I think that most patients are chronically weak. I try and get most patients strength training or I try to change their ideas of just working on inverted comas core, posterior chaining, gluteal stability plays a key role. I encourage patients to use weights and not just stretch. There seems to be a huge emphasis on stretching and it seems to be an uphill battle to change a patient's view of strength training when they've been told that this will cause damage. I've personally had fantastic results and we routinely take patients with chronic neuro back pain through an eight week program of basic strength training. Does that reflect what you would advocate?

MW- It does. I'm just looking for a slide here that I can share. So, there's a slide that I have here on conditioning the outer unit, which is essentially strength training, and so one of the big advantages of doing this is that here what I'm trying to illustrate is the sarcomeres in the muscle, and so between each sarcomeres, the top here you've got sarcomeres in series, and then just on the left here, that's sarcomeres in parallel. And when you train, we do strength training. First of all, there's evidence to suggest that you get not just hypertrophy, but you get hyperplasia, so that means you're actually laying down your muscle cells. Certainly, they've shown that in animals, so it's condensing, and there are some human studies now. So, it says you're getting more muscle cells and bigger muscle cells when you do strength hypertrophy training. Okay, so this is resistance training essentially. And just people that aren't familiar, to get an effective hypertrophy response, you really need to have a weight that you're lifting, that you can only lift eight to 12 time before you're fatigued, okay? So, you know if you can pick it up 20 times before you're out of juice, then it's too light, and if you can only pick it up four times before you're out of juice, too heavy. So, you want that eight to 12 range, and that will induce a hypertrophy for you, an effective hypertrophy for your response. But, the importance of hypertrophy in my view is that and hyperplasia is that what you can see on the bottom of the slide here is that between the sarcomeres, you have what's called series elastic components, and alongside the sarcomeres, you have what's called parallel elastic components. They behave like springs within the muscle.

APM- Yep.

MW- So, if you've had someone with a whiplash, like you're suggesting earlier, well we can certainly get their multifidus firing again, and get it rehabilitated and we can make sure with our hands that the joints are moving well above and

below, etc. All those good osteopathic principles. But, if we then send the patient back to whatever they're doing, playing rugby or driving a car or whatever way they injured their neck, well what we haven't yet done is we haven't rebuilt strength around that area, and so typically when you've had something like whiplash, there's normally trauma to the passive substance into the joints, so you can create instability in the joints in the neck. Yeah, so if you've compromised that passive subsystem and you've reactivated the active subsystem so the inner muscles and you've got rid of the pain so the pain is down, so essentially the nervous system's working well. If you were to have another impact, either in the car or on rugby field whatever it is, then the problem is that you're only as protected as those inner unit muscles, those tonic muscles. And they can only react as quickly as the nervous system switches them on. So, if you don't see that impact coming, bascially you now have a radiance of the unstable neck from the original injury, and you can't respond quickly enough to whatever hits you. So, by building strength around there, what you're doing is you're increasing the series elastic components in terms of their size because as the muscle hypertrophies, so the series elastic components, so do the parallel elastic components. So, essentially getting bigger and bigger springs within the muscle which bigger springs are harder to pull apart than little springs, and you're laying down more springs within the muscles which means its harder to pull that apart again. So, the point being that now, especially if it was someone like a rugby player, that is expecting to go back and get a whiplash within a few weeks, then that person, they really need to build big springs, and that's why the rugby players can take these kinds of hits because they do build big springs essentially in the gym. And so, for optimal rehabilitation, I really feel that to take the patient through that strength training, the hypertrophy training, and then potentially beyond that into power and reactive power which is sometimes called pertubation training or there's econcentric training as well which is where you're switching from an eccentric movement to a concentric movement. So, that's how we tend to use our bodies in sports. So, we tend to go eccentric behind before we go concentric forwards, when we throw or when we hit or when we kick.

APM- This all sounds a little bit outside the realms of possibility for 70 year old Mrs. Miggins from down the road whose never seen a gym in her life.

MW- Yeah, you know it probably is so you gotta pick your battles as it were and not prescribe something that's a waste of time for the patient, but at the same time by educating the patient, and by explaining the potential benefits at least you can give them the option to decide themselves whether they want to go through that, and so yeah, some people will some people won't, but at least you have the methodology there that you know that if you are working with somebody who's motivated and wants to go back to playing sports would be a good example, then they'll probably follow through that protocol and you'll protect them that bit better.

APM- So we know that you've gotta build muscles, hypertrophy the muscles. We know you've gotta build bigger springs and things like that.

MW- Yeah, yeah.

APM- How do you go about working out exactly what is appropriate for the given patient in front of you? Which springs, which muscles?

MW- Yes, yes, so you do that based on their clinical profile, you know what's aggravating, what's relieving, what the diagnosis is, what the postural findings you have, which muscles you see activating on the load or not activating on the load. So, it's the same principles as is actually almost identical to standing examination. You're still looking if someone's lunging for example, you're still looking to see are they over pronating. Are they, you know tilting their head to one side when they lunge? Is one quadricep more active active than the other, so the pelvis is tilting or the gluteus medius, and is the pelvis going to trendelenburg or compensated tredelenburg, so there's all of these sort of movement patterns which relate entirely to our standing examination, but you can use them dynamically and also of course from different angles as well. You know, you'd look from behind. You look from a lateral view to see are they maintaining their spine in a relatively neutral position or are they rounding right through it going into a hyper extending spine as they lunge or whatever and when you see that, then you know that there's a relative lack of motor control and that you can improve on that control. And so that's where you would say okay, so with the example of someone lunging and going into a hyper extension, well just by applying the anatomy, you know that could be a tight soleus muscle and it could weak lower abdominals or weak glutes as well. So, then you can go in and assess those different muscles or just prescribe exercises for them and reassess the lunge a couple of weeks down the line.

APM- Okay. Do you want to talk us through doing that with a real stage or?

MW- Yeah, we could do that. Why not?

APM- So, we got one of the fish in, shall we?

MW- Let's do that, let's do that.

APM- We're gonna get Fred in onstage now from feeding the fish and let's move across to

F- Hello.

APM- Our little platform here.

MW- Fred, obviously we had a quick chat earlier and I know that you've had some recent back pain.

F- Yes a bit.

MW- Has been mainly the lower back, is that right?

F- Yeah, it's only been one spot in the lower back.

MW- Yeah, is it more to one side or the other?

F - It's very central actually.

MW- Very central. Okay, okay. And what we did establish, is it tends to be, you don't like leaning backwards.

F- Yeah, it's the backwards that's the worst actually.

MW- How about sideways or turning?

F- Sideways fine.

MW- Yeah, okay.

F- Sometimes going forwards hurt a little bit or else mainly main the back movement.

MW- Yeah, okay.

F- It hurt continuously.

MW- And no neurological symptoms in terms of tingling or numbness or anything like that?

F- No, nothing like that.

MW- Yeah, okay okay. So, from what we've, we've had little discussions as well and you know what we think is that, or what I'm thinking is that it could be the facet joints sound like they could be a little bit irritated. So, what I would do is I would look at your posture and see you know, I actually have tools, not with me today, but I actually have tools to measure the angle of the spine, but seeing as we don't have them, what I would do is just have you stand. If you stand still facing this way, and I would just look at the lower dosis here and just see if there's an increase curve, and obviously we can look at the pelvic angle as well, and so there's your microphone. Right on the insides. Let's have a look on this side. Okay, so what we know with the ASIS and PSIS is that you want about two centimeters difference. So, I'd say you know, it

doesn't look like you got a particularly hyperlordortic spine, so that doesn't particularly point to me saying oh, we need to flatten out this lordosis, but we may want to pump those joints a little bit or to particularly because of your dance and your fine coordination activities like juggling. We might want to work on proprioception first and foremost because, so that's your ability to feel the position of the joints because that's so important and pain often inhibits that ability temporarily. So, what I might get you to do is lay down and probably with your head at that end and with your feet towards me and just with your knees bent. Okay, that's perfect. And so, what I'm gonna start out with, cause it's quite low level and you know it's not likely to irritate the spine is I'm going to do what's called a Feldenkrais hip and pelvis integrator exercise. So, if you can just put that leg out straight and have this one up If you find your belly button, okay, with two fingers, and then with two fingers below that. So, the belly button's opposite L3, that's L4 and then this is L5, so that's the lowest lumbar vertebrae. Now, if you just put both fingers on that level what I want you to do is I want you to very gently push down with this heel, so that you're lifting the pelvis up in that direction, okay, and then drop it back down again, okay. And what I want you to imagine is I want you to imagine that as the pelvis is moving this way so the L5, or the bottom vertebrae, is starting to twist slightly. I want you to see if you can imagine feeling that through your stomach, okay?

F- Mm hmm.

MW- So, a kind of sensation of tightening and tensioning at that level. So, it's a very small movement Let's try that again. So, just gentle push, and that's probably as far as you need to go there. What I can do is I can also palpate over your finger, okay? And so I what I want you to do is relax completely and push down through the heel nice and slow, nice and slow, that's it. And then, I would say there, you're starting to move at that level.

F- Yep.

MW- And then just drop back down. So, it's quite a small movement, okay. So, now we've got that range of motion. Let's go again just to get the range, it's quite a small range. Is there any pain there as we do this?

F- No, that's okay actually.

MW- Okay, good. So, there's a very small range. So, now we've got that range. The next thing to do is I'm going to take my hand out of the way, so that I'm not interfering with your sense of feeling and I want you to make that as fluid as possible kind of tai chi like up and down okay.

F- All right.

MW- So, it's very effortless and relaxed. So, it make take two or three repetitions. So, part of the Feldenkrais approach is to enhance awareness through movement. So, what we're doing here is we're feeling at this segment.

F- It's hard to have a very small,

MW- It is, it is yeah yeah.

F- To keep the movement very small.

MW- But this actual rolling movement is the way that infants develop their activity or they switch on the multifidus muscles and the rotary muscles in the spine, so rotators would be another one. And you of course, their straddled or stuck on their back and they have to learn to be able to push and roll themselves over. So, this is how the nervous system sets itself up to actually activate the inner unit muscles. So, that's the bottom level. So now let's move up two fingers worth, okay so just up to there, perfect. So, that's over your L4 okay? And we'll do the same thing again, I'm just gonna put my fingers back on and just push down through this hip well through the foot so the hip lifts up. That's it. And yep to there, and then back down.

APM- So, in terms of prescribing this as an exercise, how long is Fred going to have to do this for?

MW- So this is more of a proprioceptive exercise. So, there's a level of conditioning that goes with it as well, so conditioning the multifidus as we just discussed, and so

APM- Which means five minutes to 10 minutes.

MW- Yes, yes exactly. And you'll find that it will take that long to work up through both sides of the spine. Is that what we do after this, you know, if we had time is we'd switch, we'd switch sides so you'd it with the other leg.

APM- Yeah.

MW- So, part of the process is to compare levels and also to compare size because what you might find is that this feels quite easy and fluid and you switch to the other side and it feels actually quite blocked.

APM- Yeah I can imagine it.

MW- Or the other way around. You might think this, you know, I don't feel much going on here. You switch to the other side and suddenly ah, this moves much better on this side. So, what this is giving you a conscious awareness of what is going on in your spine, and it allows you to consciously adjust that. So, if it feels too loose, you might start to attempt to tighten that up using

your own muscles. If it feels too tight, you just might have to release that and relax that, okay? So, you're having a much more active engagement in the process of optimizing the balance through that lumbar spine area, okay.

APM- Okay.

MW- So, that would be a good start point.

APM- So, Fred's gonna work all the way up through the lumbars.

MW- Yeah, so you go up, all the way up to one. So, when you get up to one, which I think you're roughly at. Are you a couple of fingers above tummy button right there?

MW- Yeah, two fingers here.

MW- So, when you get to there, if you'll push down with your heel again, keep going, keep going. This is a much bigger movement of course because you've got, yep

F- Yep.

MW- and then back down. Good. You might even be able to go a little bit further than that. So just push, push, push right the way to there, and then, stop, okay. And back down. So that will be, obviously a very basic place to start. Then, we might get you to move into something that's more dynamic. So if you just turn onto all fours so you're in a crawling position and you know I know you read to the acute still, you had treatment today, didn't you?

F- Yep, just today.

MW- Now, so straightaway, I'm just looking to see how she moves into that position. All I can see is that she's you know, flat if not slightly kyphotic in the lumbar spine and that may be a pain adaptation, yeah. So, if you were to turn your pelvis this way. So, you're tilting the pelvis suit, your tail is going up. So, the idea is one of the analogies I've been given is that if you imagine you've got headlights shining out of your buttocks you're shining them up to the ceiling, okay? And then you shine them down to the floor, okay? Now how did that feel? You went oop as you shot up to the ceiling.

F- Yep.

MW- Is that painful.

F- That is painful, yeah afterwards.

MW- Okay, now where does that pain come on? Can we just get to the edge of the pain and then come back down away from it?

F- Quite early on actually. Soon as I start it now.

MW- Okay, so then come back down. What I'd like you to do is to not push yourself into pain, but just to pump that just very gently, so you're just working to the edge of the pain. So, you're going to the pain, not through the pain. And, then switch back the other way so you're stretching out that way. Now, how's that feel to you?

F- That feels fine actually

MW- That feels good that way?

F- Yep. No pain.

MW- Okay, good. And then just to the point where you,

F- Now it starts.

MW- Yep and then you stop there and then you come back. So, what we're attempting to do here is to create a little bit of control around the area to pump the facet joints if it is the facet joints that are inflamed. So, we're improving fluid dynamics, but in this four point position, the viscero loading the transverse abdominous that tends to switch on the transverse abdominous. Obviously, we're using the abs, the interdirect abdominous in particular to draw the pelvis posteriorly.

F- Yeah.

MW- And then the lumbar rectus to take the pelvis anteriorly, yeah? And so again we just pumping the musculature which is gonna help with food dynamics in that area, and potentially with a little bit of conditioning.

APM- Again, how long is she gonna do this for?

MW- I would probably say while she is more key, we're not trying to particularly target the tonic fibers at this point. We're probably more trying to just pump the area.

F- Yeah.

MW- So, how does that feel to you? Does it feel like its getting easier or getting harder?

F- A little bit easier. I feel like I can push it a little bit further.

MW- Okay, okay good. So, then we might take that slightly more advanced and you could go onto opposite hand and leg. So, you could do something like lifting up the right hand and the left leg and bring the head up a little bit as you come up. Go to where you feel the discomfort and then come back down. Bring the head right down and the elbow to the knee, and then come back up. Okay.

F- Okay, that's good.

APM- It's like synchronized swimming this is.

MW- Excellent. I almost thought we were hesitant.

F- That's okay actually. It's not too painful.

MW- Now what this is doing is it's creating more of a balance challenge and so whenever there's a balance challenge, and you can switch sides as well and see if that feels similar or if it feels better or worse.

F- 'Bout the same.

MW- About the same yeah? Good. And then tuck down. That's good. So, because there's more of a balance challenge it switches on the tonic nervous system more. So, you're more likely to activate these deep intrinsic muscles. Also, you're going through a bigger range of motion because your arms and legs are now moving, but you're starting to activate muscles that are outer unit as well as the inner unit. So, this is what we would call inner outer unit integration because you're getting the big movement of the arms and legs. And so therefore, you're using the big muscles like the glutes and the hamstrings and the lats in the back there to move the peripheral limbs.

F- Yeah.

MW- Yeah, right okay.

APM- In an imaginary situation, actually if Fred had got a whiplash we talked about earlier on, what sort of exercises would you be looking at in that case?

MW- Okay, well you know again, similar things initially, so like the Feldenkrais exercises, similar ones to that for the neck, so I'd probably start with something like that in the initial phases where we're decreasing the pain and trying to get the muscles reactivated and to pump those tissues and get proprioception back. But, then I would do very light sort of strength endurance type exercises. So, there's a few different ways you can do that. One would be to use a blood pressure cuff under the neck, so they'd be laying down supine. Put the blood pressure cuff under the neck and you

pump it up until it gets to 30 millimeters of mercury and then you just ask them to tuck the chin in. You should also ask them to swallow before you do that because the tongue goes into its rest position, its physiological rest position and that allows the anterior chain of muscles to engage effectively because the tongue is essentially rooted, so essentially the super high up muscles are rooted, which means the infrahyoid muscles can do their job and you can tuck the chin and you take the needle up to 40. So, you go from 30 millimeters up to 40 millimeters of mercury.

APM- This is an exercise that a patient is gonna struggle to do at home, isn't it? Cause they haven't all got sphinx.

MW- Well, but do you know what, I ask my patients to buy sphinx because you can get them quite cheap 10, 15 pounds off Amazon these days, so yeah, I would ask them to buy one if they needed that exercise.

APM- Right. And you've used that a lot for let's say whiplash and found it effective?

MW- Yes, yes absolutely. So that one would be quite a low level exercise. Another good low level exercise that's perhaps even more accessible to patients is to find a wall, I won't lean against this.

APM- No, please don't.

MW- You can find a wall and essentially what you would do is you would lean back against the wall, it's called walling and you'd just have the

APM- Do you want to come up Fred?

MW- top of your head, or the back of your head rather just leaning against the wall when you're keeping your body straight. Now you can stand this far away from the wall and you're gonna get virtually no loading through the neck, but you get just enough to switch the muscles on or you can stand this far away from the wall and you get a lot of loading, yes. So, it all depends on the incline of the body so it's a nice one you can increase the grade of the loading.

APM- Any contraindications or are you likely to do any damage if you get the wrong pressure at the wrong time?

MW- No, I wouldn't particularly say so.

APM- Floor manager wants us back in our seats.

MW- Okay, okay, okay.

APM- Fred, thank you very much indeed.

F- Thanks to you too, yeah.

MW- I wouldn't particularly say so. I mean obviously if people suffer with any kind of symptoms of dizziness then loading that upper neck area can compound that. So, that's one thing that you'd obviously mentioned if you have dizziness, you know. That protracted pressure of the activation of the upper neck muscles can create a sense of dizziness sometimes, but for most people they just feel,

APM- Have you got a standard periodicity in which you're gonna reassess, let's say Fred, if she were your real patient? Are you gonna see her every week, or you gonna leave it as two weeks?

MW- Well again it depends a lot on where their coming from in terms of their locality and what the condition is and so on. I wouldn't say there's a standard, but generally an exercise program I would tend to write for a period of about six to eight weeks, so at the least I would see the patient every six to eight weeks. But, quite often they will want treatment in between times, so I may do that myself, or it may be that their local manual therapist is doing the treatment and I'm just giving the exercise program in between times. So, we only really got as far there as still sort of fairly basic inner unit and just moving into outer unit type exercises.

APM- We can always get Fred back in again if you wanna develop those.

MW- Well, so you know with the whiplash, you know we talked about the potential importance of hypertrophy training and so then I would be moving into things that are more standard sort of weight type exercises like shrugs for examples, you know getting some dumbbells and shrugging.

APM- One of our viewers has said, Jilly age 50, she says she's a friend who's interested in this, but is it possible to gain muscle by hypertrophy in old age? I imagine the ability's a bit less when you're older.

MW- Yeah, so well you lose about 14% of your growth hormone per decade from the age of 20 onwards, so it does become increasingly challenging to build muscle, but you can actually stimulate growth hormone by certain body building or weight lifting techniques. So, body building probably isn't the right term cause you think of these big sort of rather unnatural looking people.

APM- Well, interesting. We did a broadcast from the gym which is very close to headquarters up in the midlands and the two personal trainers in there are body builders. So, they are, they're enormous guys, but actually they're very knowledgeable and they're very lovely guys as well. So, their personal training, I thought was great.

MW- Yes, yes.

APM- I wouldn't be put off by people just because they're enormous body builders. They obviously know a lot about muscles, don't they?

MW- They do, yes, and they're very dedicated as well because that's a lot of work to achieve that, and a lot of discipline, but yeah so one of the important things when you're starting to load up the neck and the shoulder, so often people think, how do you build up the neck? We build up the neck primarily by lifting things through the shoulders, so you start to build up things like the trapezius and the levator scapulae and the sternocleidomastoid. They're more the outer unit muscles of the neck. And of course you can work them in various ways, but I would tend to recommend is lifting heavy loads through the shoulders and pushing heavy loads above the shoulders and you know even dumbbells curls, for example, as long as you're keeping the shoulders, working the shoulders with a heavy load in them. That's gonna create a certain amount of loading. You know dead lifts is another one, squats is another one cause you're actually loading up the shoulder girdle as you're doing these exercises. So, they're all good ways of creating strength in the outer musculature of the neck, but what's really important is you've got good posture as you do that. So, you know we talked about the neutral spine on the first webinar that we did. If you have something on your back that allows you to know when neutral is, and you lift up through the shoulders, what typically happens is people will go like this when their trapezius starts to out strengthen their deep cervical flexus, you see you get this kinda ford head posture or this ford head posture as their lifting up here. What you need to train them to do is keep the head neutral and to lift up in neutral and just to shrug up in neutral. Then, you're getting equal training in the front and the back of the neck.

APM- Okay, yeah. Another quick observation for you, somebody here has said, are you aware that osteopaths and chiropractors all over the world have just been doing pelvic tilts imagining the sun is shining out of their asses. They were a bit more polite in their comment that that.

MW- Excellent.

APM- I remember once there was, our winter course, we were taken by exercises where you'd fix a light to your head in order to keep it stable on a pattern in order that you could develop proprioception, so you could, I was just thinking with a torch, you could probably do these exercises quite well.

MW- Yes

APM- But let's move on, shall we? Here's one for you. What are your thoughts on the importance of inflammation and the healing process and the overuse of taking Ibuprofen in an effort to aid healing, which I believe only has a

negative effect and slows down the healing process? And that's Kevin, who's an osteopath in Surrey. Thank you Kevin.

MW- Excellent. Well, I agree that Ibuprofen and I think any NSAID from what I recall part of the way that they work is they inhibit an enzyme called Cyclooxygenase.

APM- Yes.

MW- Cycloosygenase is required for collagen synthesis and so if you damage collagen which you almost invariable have in any kind of trauma, then it's gonna inhibit the repair mechanism.

APM- So it's actually, if I may interrupt you for a second. It is worth looking at the broadcast that we did with Dr. Nigel Hume not that long ago because he talked a lot about the effects of over prescription of drugs and the specific effects of certain drugs in particular, NSAIDs. Back to you, sorry.

MW- Yeah, and so in terms of acute management was the other part of the question wasn't it?

APM- Yeah, how does Ibuprofen affect or or anti inflammatories or any sort of affect of the healing process?

MW- Well so obviously they do exactly what we just said. They will inhibit collagen synthesis. There's always obviously the concern that the pain may be masked, you know so that's another concern with any kind of pain killing medication, whether it be anti-inflammatory or specifically analgesic. And of course there's quite a strong push even to avoid icing in some circles these days because again you're going against the natural process which is to create inflammation and swelling and if you take that kind of paleo stance if you like, you take the notion that nature knows best and it does work is optimal to heal the tissues best.

APM- You're going down an interesting route though. We've had discussions in the past about icing and the theory I have once heard propounded is that if you stick ice on a joint for less than about six or seven minutes, then it causes phasio constriction, which is not gonna help the inflammation process. Longer than that, you get phasio dilation which means that actually the inflammatory process is ease because it means that you can flush out the inflammatory exidites.

MW- Yeah.

APM- Is that not a possibility?

MW- Well, I think anything's possible.

APM- I think that's his way of saying no to be honest.

MW- I've heard many different presenters saying different things and presenting different research and I was a panel with the physio from Chelsea Football Club and a lady who is on the Olympic Medical Team and the guy from Chelsea was saying, we stopped using ice, we don't use ice anymore because we don't believe in it. The research was actually never really there, and it was an idea which seemed to make sense and even the guy that came up with it, I believe in the seventies has now backtracked and said actually no, I don't think that ice is, it was an idea that sounded right, it seemed to feel better.

APM- This is one man's view though, isn't it? And let's face it, I mean it's particularly in sport. Things seem to go in fashions, you know jumping into ice baths immediately after a rugby match.

MW- Yes, yeah, yeah.

APM- Apparently that was the best thing and now they stopped doing that.

MW- Yeah, yeah, that's right, that's right. Cause we have research that sort of looks into this now and as much as,

APM- What about heat then?

MW- Well, you know I think any temperature application can be beneficial from the prospective that it's obviously being felt by the spinothalamic tract, and is therefore potentially inhibiting nociceptive drives, so from a pain management point of view, it can be in any heat or cold application can be beneficial from the patient's subjective perspective. From an objective perspective, I know one of the people that I saw talking about hydrotherapy said that to get an affect any deeper than the lowest layer of the skin, you'd have to have the ice pack on for 25 minutes, but we know that from 15 minutes onwards, you get an ice burn, so you need to leave it, you need to take it off by 15 minutes. Otherwise, you get an ice burn to the skin. So, you know it's kind of a catch 22, and she felt that it was more psychological than anything.

APM- Diana has sent in a question. She says, hi Bruce and Matt.

MW- Hi.

APM- I get this a lot actually. I'll forgive you Diana. My name's Stephen, but I'll forgive you. Any advice for tendinopathy, gluteal in particular? Is eccentric exercise considered the way to go? Are you likely to want to get Fred in again? Or can we release her from the studio? Some more that we can demonstrate with Fred?

MW- There are more things we could do.

APM- Yeah, well if Fred doesn't mind hanging on for a little while, just in a little while Fred, we'll let you back in.

MW- Okay, okay excellent.

APM- So tendinopathy.

MW- Tendinopathy, yes yeah. Okay, well I'm not an expert on gluteal tendinopathy, but what I understand of tendinopathy is that very frequently there's a neovascularization process that occurs, so there's laying down of new blood vessels, and we talked a little bit about that when we were doing the barefoot webinar.

APM- And the theory that one of your, one of the people you were talking about was that he was expecting his Achilles tendon to blow, so he just carried on exercising, and instead of it actually rupturing, it just got better.

MW- Yes, so Alfredson was his name, and basically he knew the eccentric loads in the muscles would create trauma, which concentric don't tend to create trauma. So, he applied that to the tendon as well and thought that by eccentrically loading the tendon, he could just rupture it as he say, and it got better, and so then he applied it to his patients who were waiting for their surgeries. They all got better, and the research since then hasn't, so he has 100% success rate. It was again, he had 20 people in his study, but all of them recovered and they were presurgical. They'd booked him for their surgery. So, that was Achilles specifically. So, then they've applied the same thing to the patella tendon and they've had similar results, but what I was gonna say is that no one's had 100% success rate since that original study. So, on average I understand it's about 70% success rate. So, it's a pretty good success rate for eccentric loading protocol, and but I would think it would be the same for the gluteal tendon as well. So, you know it makes sense that if the process, if the pathological process is the same, that it would be the same rehabilitation process as well.

APM- Interesting, it feels very unnatural. I've got what I think is a flexor hallucis longus strain at the moment and I reckon if I put any strain to that it's gonna snap cause that what it feels like it's about to do.

MW- Right, right.

APM- And I'd be reluctant to test that theory by myself.

MW- Yes, yes.

APM- Quite happy on someone else.

MW- I understand that, yeah, yes.

APM- I'll get your advice after this on what I should do for my FHL.

MW- Okay.

APM- Can we get Fred back in then?

MW- Yes, why not?

APM- Where would you like to go with this? Fred, could we ask you to come and join us again?

MW- Okay. Alright, let's have a think, let's have a think. So, obviously without equipment what I think we could do in terms of strengthening, so what would be a great

APM- This specific for Fred's lower back.

MW- Yeah, yeah I'm thinking for Fred's, what I'm guessing may be a facet joint that's irritated. And so maybe you want to build some strenth in the lumbar rectors, but what we don't wanna do it in the inner range, okay? We want to do it slightly in the outer range, so a good way to do that would be doing a bent over row. Now, so a bent over row, what you do is you take a stance that's comfortable with your legs, and again imagining that you're shining your headlights up towards the ceiling. You bend forwards to the point where you start to feel hinky have your knee soft as well. You bend forwards to the point where you start to feel a little bit of resistance in the hamstrings, okay? So, I get to about here and then I really don't wanna go too much further.

APM- Fred's a dancer, so she probably

MW- But, because you don't want too much extension in your back, let's try letting your pelvis go again so there's not quite, just so you're not shining the headlights up so much anymore.

F- Yep, okay.

MW- How does that feel? Is that sore?

F- That feels okay actually. Not sore.

MW- So then we can take, you know a dumbbell, a barbell, baked bean cans, whatever and we can a row type movement and this would be what we call a bent over row, okay? So you wanna imagine that the elbows are being pulled

to the ceiling by puppet strings. That's the technique, and if you're using a bar, it would come to your midriff. Bring the bar up to here, and then back down. Okay, and so as we're repeating like this, up and down, up and down, of course the erectors are working and with an extrinsic load, with this leverage of the trunk, how are you feeling?

F- That's okay. A little bit, yeah.

MW- Then let's just come back up outta there because I know that you've had some pain today. So, that would be one way to work the lumbar rectors. And then of course you could do it, you know more functiony, you know other functional exercises like dead lift type patterns, so a dead lift would be picking a bar up or a load up from the ground.

APM- There's a good way and a bad way to do dead lifts as I understand it, as it can be quite a risky exercise for your back as well as being a beneficial one.

MW- Sure, sure yeah. So, there's always controversies around this, and basically you can take a retiary response and you can bend down and pick the bar up with a relatively neutral spine.

APM- Yes.

MW- Driving through the ground, so it's like pushing the ground away from you. That would be one way to do a deadlift. For someone, obviously you assessed Fred and you didn't find a thing with sacroiliac joints.

APM- No, I didn't.

MW- But, if someone had sacroiliac joint pain, then you could take a wider stance, so it's what we call a sumo stance, a wide stance apart like that and you're picking the bar up between your legs. So, you're here and that allows you to get a little bit deeper, but also protects the sacroiliac joints a little bit cause you haven't got as much sheer cause there's not so much sagittal plane loading. And that would be an example of something that's relatively functional to for activities of daily living. Now, obviously a bar may be not so functional or you know you might not see such an obvious carry over, but if you were to pick up something like a kettle bell or a dumbbell between the legs or something which is called a Jefferson squat, so you're down like this and you're picking that up to here. So, essentially the same movement pattern. Well, that's very akin to picking a child up, picking up a suitcase, picking up a chicken and putting it in the oven, whatever it might be. And that would be a way to start to build some, first of all some strength but also a little bit of confidence back into the movement patterns. So obviously, people have had quite acute pain. Then, to get them confident to bend and pick up things initially is a key part of the rehabilitation.

APM- We know from talking Fred earlier on, that Fred does a lot of running. Did you say five times a week you were running?

F- Yeah, about five days, four to five days.

APM- Is that gonna be good for when she's got an acute back problem? Are you gonna say that's very bad?

MW- No I wouldn't say that at all. I'd probably say that it's probably a good thing cause it's gonna pump the facet joints, but if it seems to be irritating the back, then of course you need to ease back on it, but actually walking, a walk run format is quite useful because the walking obviously is lower impact and what it means is that you can go a little bit faster in the run than you might normally, which you think would be higher impact, but is lower impact than jogging. So, jogging is the highest impact, So, it's like riding a horse. When a horse walks, then there's very little up and down movement. As it trots, it goes up then down, and that's like us jogging, and then when it gallops, it goes smooth again.

F- Okay.

MW- So, to to a walk run format for you, it might be much better and you might find that your back feels much better. And the faster you are,

APM- You were gonna tell us to get onto fibro five fingers aren't you because that way we'll be four foot loading which is even less impact.

MW- That would be another thing to consider.

APM- Sorry Fred.

F- The faster you are, the better again it is, the less impact it is cause you're more steady in a way, is that right?

MW- - That's it, you're more steady yes, so it would be like riding a bike, you know you go fast on a bike, you're much more stable, but it also has to do with up regulating the musculature, so when you sprint, everything is engaged.

APM- Yep.

MW- But, also you have much less up and down movements and less impactthrough the spine. It's actually Doctor Charlotte Cowie whose a sports medicine doctor for the Olympic team, or was she said that it's almost pathopneumonic for a disc that if there's pain when jogging but not when walking or sprinting, then yeah you know that's it, it's a disc injury. Because sort of that up and and down loading.

APM- Yes.

MW- So, the point being that I don't think this is a disc injury, but the facet joints, if it is the facet joints they don't particularly like being jarred either, and so the same would apply.

F- I must admit I was actually running this morning to see how it felt and it felt okay. So it almost felt better afterwards. Cause I felt like it moved.

MW- Yeah, yeah.

APM- We hope all this is right cause Fred's got a big performance tomorrow, so she's not gonna rest it, she's gonna be performing tomorrow. She was gonna take a hand full of painkillers and get through it, all right?

F- Yeah.

MW- I think generally, for these kinds of things, movement actually works really well to settle it down.

F- Yeah.

MW- Cause movement is one of the things, so you know I've taught there a couple of times about keeping a neutral spine and doing these lifts and so on. That has its place and but so does the fluidity of movement and not maintaining neutral spine actually rounding through the back which we did more when the movement on all fours.

F- Right.

MW- And but the movement drives creates proprioception, so that's what we're aiming to achieve and the proprioceptive drives inhibit the pain drives. So, the more you move an area that's been uncomfortable, assuming it's not irritating you, the quicker your pain will drop. Yeah, so that's another good thing.

APM- You brought the SI joints into the equation a moment ago, and Salamay has asked your views on the use of sacroiliac belts.

MW- Right. Okay.

APM- Particularly in chronic pain she says.

MW- Well I think sacroiliac belts are great for you when you are exercising for example and the pain is likely to be inhibiting the muscles. So, one of the issues of pain is that it shuts off these intrinsic in the unit muscles. So, if the belt helps to reduce pain, then your corrective exercise program is more

likely to be effective, but if you wear the belt the whole time, then of course now you're relying on the belt to stabilize rather than the intrinsic muscles. So, you know there's a balance to be struck with the use of belts, but I think they absolutely have a place, especially with instabilities.

APM- And Robin says, Evening all. Evening Robin. He's asked about exercises for lateral and medial epicondylitis. Any thoughts on that?

MW- Okay.

APM- What would you tell Fred to do if that were he problem?

MW- Well, first of all, I would assess Fred. Inside my clinic room, I have a cable machine to sit little cable column with high and low cables, and I would ask her to take hold of the cable and to push it and ask her then to turn around and to pull the cable, and I'd ask her to twist with the cable. So, I'm looking at how she interacts with this extrinsic load and what you find very commonly with people with these kinds of conditions is that they are arm dominant in the way they move and so what that means is that they would literally move the way I just demonstrated. They push like this as opposed to getting it here and going like that, which is an integrated push pattern.

APM- And very elegant if I may say so.

MW- Thank you, thank you. So, and then same with the pull. Now of course you don't necessarily expect people to do quite what I did there, but you expect them to, you want them to use their body. You want to see them leaning into it a little bit and pushing through because when you're generating power, even low levels of power, the movement sequencing should be from the legs to the trunk to the arms because the legs are the most powerful part. It's where you're generating the power from cause it's your contact with planet Earth. The core then transfers that through into the arm. Now, if you've got either a weak core or you're not using your legs. Those are the two most common scenarios. Then, you become arm dominant, so you play tennis with your arm like this or you hit the golf ball with your arms and you don't get the big swing through the trunk, so then you end up getting quite often things like golfer's elbow, tennis elbow, etc. Or carpal tunnel, other shoulder injuries because of that lack of integration, so that'd be the first thing I'd look at.

APM- So you'd then be trying to encourage them to use the rest of the body, but they've got this epicondylitis. Would you be giving some form of eccentric exercise to try and overcome that?

MW- Yes, yes potentially. You know it sounds like both sides isn't it?

APM- Well, he's asking for either.

MW- Okay, okay, okay yeah. So, quite frequently when you've got let's say medial epicondylitis, then you might find that you've got excessive tension or shortness in the extensor mass or the extensor muscles and vice versa, you know or a strength imbalance. So, I think with lateral epicondylitis quite frequently you find that the flexor group are stronger and their pulling the extensors into a stretch position. So, there in their outer range. These were in their inner range, so then I'd want to start working to stretch out the flexor group, build strength in the extensor group and so on.

APM- Interesting when Laurie Hartman was asked about this said he's never seen a golfer's elbow or a tennis elbow. He's never seen any of this. He says it's always just joint restriction which of course would follow up with what your saying. It was not surprising that Laurie would say that because he's such a great manipulator. In your line of work Fred, presumably you're using your wrists and arms quite a lot with juggling and so on. Is this sort of thing a common injury? Tennis elbow, golfer's elbow.

F- I think it's mostly wrists actually from my colleagues and staff. I always hear about wrist injuries because I think it's used a lot to flick, flick the clubs and the equipment. But, I found really interesting what you said earlier 'bout when I'm training. I feel like I'm often engaging the core and really effects what my arms are doing, so I think maybe that's what you were describing. You get the power from the different part of the body, is that right?

MW- - Yeah, absolutely. Yeah, yeah for sure.

F- So it was interesting to hear.

APM- Let's release Fred back into the world.

MW- Great, thank you.

APM- Thank you for coming in this evening.

APM- Now, I've got some more questions for you here. Actually, what you said about Laurie is incorrect. He was demonstrating that we treat the whole body not pathologies as such. I don't know who sent that in, but

MW- It's a slap on the wrist buddy.

APM- I mean, Laurie did say that he was asked on stage once to ask what his treatment was for tennis elbow, and he says he's never seen one. He then went on to, but you know we can have a discussion about it some other time. Somebody's commented here that they've seen several patients who've had, who've put hot water bottles on irritated SIGs and they've had far more pain as a result. I'm not sure that's universal, but again it's the evidence around hot and cold therapy as you said is really difficult, isn't it because we had

somebody in, oh gosh it must have been a year ago now to talk about heat therapy and of course what they suggested was that there was some fairly convincing evidence for using cryotherapy in fact, sorry, to resolve injuries, and now we're seeing other people coming in with new evidence you said for the physio at the football club saying that it doesn't work

MW- Yes, yeah, yeah, yeah.

APM- Are you convinced by the new evidence? Or is it just selective evidence that they have?

MW- I can't say that I'm massively up on the evidence around cryotherapy or

APM- No, we didn't ask you in to talk about that.

MW- But obviously you know I've studied this part my training and picked up on it at various conferences and things. I think it can be beneficial for the patient to have something to do that's relatively easy. It's likely to inhibit the pain to some degree. Although, you know as you say, sometime it can flair it up. I mean the old wisdom, natural pathic college was that you know if you've got something that's inflamed, you put cold on it. If you've got something that's perhaps restricted, you put heat on it, and then you can use hot and cold therapy to stimulate blood flow to an area. So, you're using that kind of contrast bathing approach and that's particularly good for passive tissues, so if you've injured your medial collateral for example in the knee and you want it to heal quicker, applying a hot and cold compress to it or hot and cold showering every morning should theoretically stimulate the blood flow to it and certainly it stimulates blood flow to the local area, whether or not it gets into the tendon and has any impact on the tendon or the ligament and I don't know.

APM- There's another one here and again it's about ice therapy I'm afraid, but somebody's commented that her mother's just had a knee replacement and ice has been advised 15 minutes hourly to try to get the swelling down to help her to do her exercises. The questioner understands that that is standard post knee replacement protocol to calm down the body's overreaction and aid exercising and that's a common theory isn't it that the body doesn't know how to control inflammation and overreacts.

MW- Yes, yes, that's interesting isn't it? It may be some of that is because perhaps in evolutionary times we were forced to move even when there was pain, you know, and so we'd have had more of a mechanical pumping effect because we'd have had, with a sprained ankle, you'd still have had to have got up to get the water or whatever it might've been and hobble along whereas perhaps in this day and age we say no, you'll sit down put your foot up, you know whatever, we're a bit more mollycoddling of people with

injuries. So, I don't know, but it does seem there's a fairly positive trend away from icing injuries.

APM- Interesting.

MW- It's worth looking up. It's worth Googling.

APM- A comment from one of our viewers. I call the call the bodies transmission tunnel, lack of core engagement seems to bleed power from top down or bottom up in exercises and sport.

MW- Yeah and you know obviously primarily it's from bottom up because as we said earlier that's where you tend to generate power from is from the feet up through the legs because you have to push against the Earth to generate power, but there are exceptions to that and that would be you know things like handstands and gymnastics. In a way, you are generating power through the hands, but yeah absolutely, I agree with that.

APM- I'm still always drawn back to those comments of Eyal Lederman's that eventually specific core stability training in itself is maybe less important than just doing exercise because in every exercise you are engaging the core to some degree. We've done the math of core stability.

MW- Well yeah, but it's still an interesting point. You know, I think so if we were to take an example like Fred's example and you know what could we do that's better than what we suggested on the mat? There's probably a few things, but I don't know what Ale would suggest in a case like that. For me to be on the ground with the first one, which was the Feldenkrais exercise, you're minimizing axial loads so if we have it right or I had it right and it's a facet injury, let's say or facet inflammation, that's probably a good thing to have no axial load. It allows for more pumping of the joing because there's not gonna be any muscle spasm or less muscle spasm. It allows therefore for better proprioceptive development and so on and so forth, and so you know I'm not saying that that's the only way to do it, but if Ale's saying well that's not very functional because people don't lay on their back, well it's not very functional to have muscles inhibited because you're in pain when you're standing up either. Or you got altered sort of firing of the muscles because of the pain when you're standing up. I would rather try to clear the inflammation reengage the proprioception and gradually, so it's what we call a stage progression or going from isolation to integration so you start isolated reengaging muscles that are inhibited by pain and gradually work your way back into integration. So, you know at the end of the day we're talking in the same language. We're saying you gotta get back into functional movement patterns that are representative of what you do in active and daily living or in

sports or in your work and but I still think there's a lot of benefit to the ground based and swiss ball based and gym based exercises.

APM- Yeah and again it's an argument in that discussion we had when we talked about cores, but not just this evening. You've talked an awful lot about using neutral spine when doing exercises and today, the one day you haven't brought in your neutral spine, your clever stick.

MW- Neutralizer, yeah, yeah.

APM- Which is again is worth looking at isn't it because if you want to encourage people to maintain the right posture when they're doing exercises then something like that is very very helpful.

MW- Yeah and you know it's not just about necessarily maintaining the right posture or even necessarily strengthening the muscles in the right length tension relationship. I think those are all benefits, but some of it is about motor learning and it's the notion that we used the analogy before It's like playing tennis that you know if you can teach the spine that being in a neutral position, like being neutral on a tennis court is the best place to be, it gives you the most number of options to move forward, backwards, sideways, rotation, etc. Then that's where the nervous system will tend to migrate you back to. You know, all of the things being equal.

APM- Yeah. Salamay's come in with another question and asked how early can you begin postnatal training in either a fit mother or an unfit new mother?

MW- Okay. Well, I think it depends what you mean by postnatal training because in nature of course, mom's have to move quite quickly and I think if you're looking more scientifically, then Diane Lead does a lot of postpartum courses, a physiotherapist, and she believes that eight weeks is the kind of period where you can start to begin to really load the system again because the relaxant has now moved and you're starting to see changes in the passive subsystems. So, the connective tissues. But, that doesn't mean you can't start activation style exercises from much earlier, you know. And, I think in nature that's what you'd do. You'd be on your hands and knees a lot looking after the baby you know and changing nappies overseas, what we do in this day and age. So, and actually my grandma apparently was forced by her maternity nurse to scrub the floors in the maternity ward. That was part of what they got them to do, and that's a perfect four point exercise to get the transversus switched on.

APM- Yeah.

MW- But, you know obviously it depends on a lot of circumstances, you know how traumatic the birth was, and whether there's a caesarian and whether their breastfeeding cause that's gonna affect the uterus and the contraction of the

uterus which is gonna affect the abdominal wall as well, so there's many factors.

APM- Okay. Do you have a range of exercises that you turn to for rehabilitation training, or do you just make it up as you go along depending on, I don't mean that in a nasty way, I mean you look at the area and say, what muscles are around there? How do I influence those muscles?

MW- Well sometimes it is a case of doing that, a case of making it up, but I think when you've got a few core principles, like the idea of isolation to integration, the idea of starting with a neutral spine and then movement into full ranges of motion. Starting with the inner unit, moving to more outer unit. Those kinds of concepts, then you can apply that to anywhere in the body, and we've talked a number of times about Panjabi's model you know the active, passive and neural subsystems and again just having a model like that can think around each injury, okay so what needs to be addressed here. The pain needs to be addressed, you know? So, how can we help with the pain? So, they might be hydrotherapy, it might be pain killers, you know, in some cases in spinal injuries, it might be that you can send them for an epidural in order that you get that window of opportunity to reactivate the active subsystem because a lot of these things are long acting, you know three, four, five weeks acting. So, you got a window there, where you can actually work on the active stability to take the stress off the passive subsystem while they're in chronic, persistent pain, you can't get anything to activate. So, there's all kinds of, so that's thinking of it using that model I think is very, very helpful. And then you can make it up.

APM- And we have described that model in previous broadcasts though we can refer back to that on the recordings. Three more questions here at the moment. Your thoughts on KT tape, effective or?

MW- I do, I've never really used taping much myself, and I think probably cause I've never really worked in acute sports injuries care, but you know haven't gone down that route for whatever reason. You know I think all taping, of course what you're doing is your attaching something to the skin, which embryologically is the same as the brain. So, the skin and the nerves in the brain are developed from the ectoderm, so the skin is an inflammation super highway direct into your nervous system. So, if you want to protect a joint or change the way a joint is being utilized by the muscles, then a great way to do that would be to put tape over it, and I think that's essentially what a lot of the research seems to be towards is that it may have a neural effect is unlikely to have an actual, it's not really reinforcing the passive subsystem is stimulating the neural subsystem.

APM- I have, you probably know Tom Hewitt.

MW- Yes, yeah, yeah.

APM- And he and I go back some way and I turn to him for lots of advice about taping and in fact we're in discussions at the moment about running an online taping course.

MW- That would be excellent.

APM- And, of course we will include the use of KT Tape and all the other different names for the same sort of stuff, and he was saying, yes it's very important because lots of people want it, and people are feeling benefit from it, but there is absolutely no evidence for what the manufacturers claim it's doing. So, it may be having some effect, but possibly we don't know why.

MW- Yeah, yeah, yeah.

APM- Two last questions. Is there similar exercises to the ones you just showed us there for the thoracic spine? What would you do for facet joints there?

MW- Yeah, so depending on what you're trying to achieve, so you know obviously the bent over row will be working the thoracic erectors just like it'd be working the lumbar erectors, as would the four point exercise with the arm and the leg moving.

APM- Superman, what it is always called.

MW- The Supermans, yeah they've got so many names. We call them horse stance dynamic. So, in the C.H.E.K. system, you got the whole stance series, and physios call those four point kneeling. Excuse me. And then you've got bird dog exercises and Superman exercises and they all kinda, but so from a thoracic spine point of view, you know if taunting the thoracic spine on the floor, I would do probably a prone cobra type exercise which some people call a dorsal raise. So, you're laying flat on the floor and you lift up, keeping the chin tucked in. I don't know if we can do this on the floor at the moment.

APM- Go on, let's have one go on the floor with this. Somebody behind the camera will finish off with you on the floor.

MW- Okay, excellent. So, basically you're laying face down and you're going to, what I tend to do with my patients is put a watch or something for them to focus under their nose, cause what that then does, it tends, if you don't put something below the nose, they tend to look up like this.

APM- Right.

MW- And that creates a sort of hyper extension through the suboccipitals, and so it's better to give them something to focus on down there, and that creates a better length tension relationship around the neck. Now, with the hands,

because normally when you're working the thoracic erectors, part of the reason you're working them is because their long and the person has a stooped posture. So, then I would want to, sorry, that tends to go hand in hand with protraction of the shoulders and rounded shoulders. So, typically you want to open the shoulders out into the super nation, so palms down towards the ground and then thumbs up towards the ceiling like that and then tuck the chin in and then you might hold this say for 30 seconds or so or actually for patients maybe 10 seconds and after 10 seconds you might just drop down, rest the head down. Let everything relax and then come back up again like that. Okay, now if you were training someone to reactivate the multifidus, you could get them to swell them multifidus before they lift and then also if someone has a hyper lodatic lumbar spine, you don't want them to activate their lumber rectors in a shortened range. What you can instruct them to do is to tense the glutes first so their squeezing their bum together, and then they lift up so that's creating a posterior tilt.

APM- Yeah.

MW- And that posterior tilt is flattening the lumbar spine to some degree which then means most of the extension's coming through the thoracic spine.

APM- Yep.

MW- And so then that would be it there.

APM- Good. So now I've got a little range of exercises for the thoracics as well, and I can't ignore this. The question's been on my list for a little while. Chronic plantar fasciitis, how would you help with exercise, taking the pressure off the area considering it's the first point of contact? Is that too difficult?

MW- Well, it's not difficult, but I would probably go back to barefoot.

APM- So, watch the previous broadcast on the bare truth.

MW- Yeah, and so you know of course, rolling the plantar fascias has been shown to be beneficial on a frozen coke can or something like that, and but exercise wise I actually think it's a similar process to with the Achilles tendon.

APM- It's been great fun Matt. It's another 90 minutes that just flashed by and really useful. Hopefully everyone in the audience found it a useful way of coming to a set of exercises specific for the patient based on what's wrong with them rather than just taking them from rehab my patient all those others and just giving them random exercises.

MW- Sure, sure.

APM- So thank you once again for your expertise