

TOM:

I'd like to welcome Tim Watson for interview here for Remedy Physio ahead of his course here at Remedy House in Sheffield on the 3<sup>rd</sup> September. It's a great honour to have Tim with us today. Hopefully he'll answer some questions which, certainly, I've been interested in throughout my career as a physiotherapist, and I hope all the people listening to and reading this will find interesting and helpful too. First of all, Tim Watson, tell us how you developed your interest in tissue healing?

TIM:

It started off with the first bit of serious research that I did which is way back in the early 1980's which was part of when I was doing a Degree in Biomedical Science and I picked on a research topic which looked at the question of how we measure healing because a 'healingometer' would be pretty damn useful in the physio world and so at the time if we had a means of measuring how fast something was healing, we could then compare Treatment A with Treatment B and with not doing anything. So that was in the early 80's so I was trying to find a way of measuring how fast people were healing. Effectively that grew into a PhD and I've been dabbling with it ever since for around 30 years and I haven't sorted it yet but I've got further than I did 30 years ago.

TOM:

Do you think it's important for physiotherapists to have a good knowledge of the healing process?

TIM:

Yeah, I think that in terms of whatever training program we go through, we tend to cover it in Year 1 (its Physiology 101 or Conditions 101 or whatever it happens to be called) and we don't tend to go back to it but almost every patient we see, whether it's a back pain or sports injury or orthopaedic surgery patient, they've got some kind of tissue damage and we're trying to interfere with that damaged tissue to try and make things better and my view, maybe it's a bit reductionist, is that if we can understand how these things are supposed to get better, then we have a better chance of choosing the right treatment at the right time for the right patient. If we understand what's supposed to happen, how it's supposed to recover and what we can do that actually makes a difference, we can try to be desperately selective but you can't be selective if you don't understand the right process. That's my reading anyway.

TOM:

I think one of the things I've struggled with at various times in clinical practice is actually identifying what stage of inflammation is in, in order to know what variant of treatment I'm going to deliver. How would you go about where someone is in their inflammatory cycle or healing cycle?

TIM:

I think most people usually start from the classic timescale and the problem is with classic timescales is that's how long it takes under ideal conditions and most of the patients we get to see are in the far from ideal conditions so, in the therapy world, we get a pretty skewed view about inflammation and healing and repair, because most of the patients we get to see aren't doing very well and they're doing 'not very well stuff' and so that skews our view right across the field whether it's a sports injury or whatever.

I tend to go by what I find on clinical assessment rather than what the book says, because the book says 'inflammation's supposed to last X no. of days and then it leads into this and then it's supposed to lead into that' but that's almost certainly not going to be true for the next patient you see, so I tend to leave the book alone and the theory alone and go by my clinical findings but your clinical findings are really second order, so you look at pain, swelling, redness and tenderness. They're all second order measures. You're not assessing inflammation, you're just taking some gross external signs which you're taking to represent some kind of internal process and there's no way it's a straightforward, one-to-one linear relationship because we all know you can have a patient with outrageous pain whilst their inflammatory signs are close to zero, and others with outrageous roaring gross inflammatory signs who say, 'Well, it doesn't really hurt much'. It's like an X-ray in OA, you can have gross OA changes and the patient doesn't complain, so I think with inflammation it's the same thing, so going back to where we started, that's why I was trying to come up with the 'healingometer'. Some way of measuring how something is healing because you can't trust the external signs. The more external signs you look at, the closer you're likely to get, because you get a more refined picture. If you only take pain or you only take redness, it's pretty crude, but if you take pain and the redness and tenderness and range of movement and function and, and, and etc. You get closer and closer but you're never going to get there because they're still second order signs.

TOM:

So it's like an aggregation of indicators rather than creating your 'inflammation-healingometer' that gives you where people are?

TIM:

If we had the 'inflammationometer' or 'healingometer' then, that would just be like 'sexy-on-legs' but we haven't got there.

TOM:

Yeah and I think this ties in with, for example, in my field with manual therapy, a lot of the clinical tests that we're trained in are no longer seen as relevant so for example, shoulder specific measures for impingement, palpatory techniques etc, have poor evidence though for instance in the upper cervical spine you have good evidence

TIM:

Yes, but in manual therapy, if you only used one test technique on the knee or one test technique on the shoulder, it might tell you something but it might mislead you but if you do 5

tests and you take the package of 5, it's a better indicator than the package of 1 and the thing I would suggest is true whether you're looking at a muscle tear or inflammatory process in a joint. But can't do 20 or 30 tests, there's got to be a compromise between how many clinical signs, tests, symptoms you're going to look for versus what's the most effective package that's going to give you the information before we make a clinical decision. Because we're not trying to find out everything, we're trying to make a clinical decision that gives the patient the best chance of getting the outcome they want.

TOM:

Yeah, interestingly, a lot of things seem to fit well into functional scores like questionnaires like the Neck Disability Index or the Oxford Shoulder Scale or one of a multitude of things and I think sometimes, one of the reasons they show up so well in research is because they aren't really skill-based they're just totally questionnaires aren't they? It's easy to assess a questionnaire but hard to assess the softer skills of clinical assessment.

TIM:

Absolutely. At one point I was desperately keen on the most objective measures we could ever come up with and I still love the objective measures because I'm a hard-nosed scientist working at the physio end of the world but at the end of the day, the questionnaire can tell you a stunningly useful batch of stuff because it's what the patient feels about their condition, their status, their disability. A few years ago, one of my patients with haemophilia (this is about haemophilia, it's not something relatable to this topic really) but we were looking at how you can measure improvement in a child with haemophilia, how you measure change, how you measure disability and we found that what the medics and the nurses and the physios thought were really important markers, the patients (the kids) and their parents had a completely different view about what was important. Therefore taking the patient's (whether a child or an adult) perspective on 'What's the problem?' turns out to be really important and I would give that a lot more weight than perhaps historically I have done. They (the measures) are a bit soft, at least soft compared with the so called objective measure but if you measure a range of movement, which is apparently objective, it's not blinking objective at all, it's got a lot of subjectivity and skill mix. You know if you and I measured someone's range of movement, the chances of you and I coming up with the same number of degrees of flexion is close to zero. We both have a degree of error, and the machine we're using has maybe got an error and if you add up machine error, my error, your error and the next person's error, that error starts to get pretty damn big so we're not that objective, even with our objective scores.

TOM:

So, should we stop trying?

TIM:

No, I wouldn't stop trying but we should give them less importance than historically we have done as a profession.

TOM:

Say I wanted to deliver a treatment based on what I felt was to be a particular phase of inflammation or tissue healing, where would I go for that?

TIM:

Well I would take a mixture of the most obvious clinical signs but they're subjective and would include pain, tenderness, reluctance to move and stuff like that and I would take the patients perspective on 'How much grief does this give you?' Does this give you more grief in the morning or the evening? Is it giving you more grief today than last week or less? That sounds really soft but actually they're pretty damn good indicators of whether the patient is making progress compared with the objective measurement of making progress. Whenever I'm doing research (which is most of my work time at the university) I'm really quite keen on the minimal important clinical difference. So, if you've got pain, I can statistically reduce your pain by 0.5 on a VAS scale and prove that statistically I've reduced your pain. If I can reduce your pain by 4.5 to 4, as a patient, you don't know if I've reduced your pain or not. You've got to reduce your pain by 2 points, haven't you? So, therefore not 'blow the statistics' but the clinically important difference, whether you're looking at a Rowland Morris Disability or whether you're looking at VA as pain, or the range of movement in the knee, how much difference do we have to make before the patient notices a difference and that's a different thing to a statistical difference and people miss that point. That's critical.

TOM:

I certainly have patients who I see improvements in but they don't feel them.

TIM:

So, you say the patient's better but they don't say they're better. So, who's right?

TOM:

Well, the patient!!

TIM:

You've got a stripe on your uniform but the patient's got the pain and the disability and the dysfunction, so who's right? With all due respect, it's the patient.

TOM:

Then I usually try and persuade them that I'm right!

TIM:

Yes, so do I!

TOM:

We're in a phase of clinical reasoning where the bio-psycho-social model is being seen as a relevant paradigm for the care of patients rather than the medical model. At the conference

you followed Lorimer Mosley, which was fascinating to see, and you were attempting to rationalise your understanding of the healing process with what he was saying about the multifactorial biopsychosocial process in healing. Now, at the time, I didn't think you had really enough time to explain it. Would you like to take that opportunity now?

TIM:

Yeah, it depends whether you're going to give me 3 hours or the 35 mins they gave me. I'm not knocking the biopsychosocial model because it's a great model, but I'm looking at it from a medical model/biological model perspective and when you apply manual therapy, you as a manual practitioner must know that if you apply manual therapy to me you must seek to have an outcome. When I do ultrasounds on you I expect to have an outcome, ditto massage, ditto exercise, and therefore there must be a mechanism (very mechanistic and reductionist) by which your putting your hands on me and giving me a bit of 'pushy-pushy, rubby-rubby', there must be a mechanism by which that produces the outcome. We know that the outcome happens, we know that there's an outcome change with ultrasound, with exercise, but in that presentation I was trying to say, 'Is there anything in common with the mechanisms of these different therapies?'. It looks like there may be a commonality in terms of chemical mediators. I tried not to get into the finer detail of what's the difference between Prostaglandin E2 and Fibroblastic Growth Factor Alpha 1 because everyone would fall asleep, but it looks like part of what happens when we employ exercise is that we stimulate a whole range of pathways, it looks like when we use manual therapy we stimulate a load of pathways. They're also pretty similar pathways when we do ultrasound, and laser, and massage, and electro-acupuncture, so therefore I'm not suggesting for a minute that exercise only achieves its effect by stimulating the chemistry of repair, I'm saying that part of what exercise achieves is stimulating the chemistry of repair but so does manual therapy, and ultrasound and laser. That could be the common core.

TOM:

Would you also say that talking therapies could work in a similar way? There's certainly some evidence that if you measure these chemical mediators in the tissues and you employ things like maybe CBT, that the psychological therapies, the relaxation therapies plus wider, then there's certainly some evidence that you have real effects on the mediation systems by doing the talking and that's part of therapy anyway. We all talk to patients and we historically have put that down as just the stuff that goes around the treatment but I'm pretty sure it's more than that. I'm pretty sure it's core and therefore I don't find any conflict between what I'm looking at and the biopsychosocial model because it takes an ever wider scope of things into account. I'm just looking for the reductionist, mechanistic, 'How does pushing in Direction X achieve Outcome Y?' but I'm looking for the gap in the middle that no-one's really tried to fill.

TOM:

That really ties in with Joel Bialowski doesn't it, with his non-specific effects of, well, he looked at manual therapy, but you could apply this to any kind of intervention in the role of a person who's trying to help someone with a problem

Tim:

Yes, I don't think we're coming from radically different positions. We might be starting from different ends of the therapy world, but actually I don't think we're coming to radically different conclusions. And I don't think, to some extent, it's desperately important whether you use a Maitland approach or a Kalternborn approach or any retro-physical agents mixed with exercise, it matters if you get an outcome. It matters that you do it well. I can't see any radical difference between Approach A, versus approach B, versus approach C, in terms of their ability to fire up the inflammatory 'repairing cascade thing' and I think the chemicals may be the driver, not the only driver, of course. They're out there and they're real and we need them.

Tom:

In a simplistic way, Toby Hall said in a recent conversation about manual therapy and exercise "It shouldn't matter what you do as long as you're delivering something carefully and well." Giving some rubbish exercises is not the same as giving good exercises.

Tim:

Absolutely. If they don't do the exercise well, if they do it badly, then you're not going to get the outcome. It doesn't matter how good you are at choosing the exercise, it matters if the patient does it. If you're going to use ultrasound, it matters that you choose it for the right reason and you give the optimal dose and if you integrate the ultrasound and the therapy with the exercise therapy, then you're going to get the optimal outcome. If people say 'Oh, I only use exercise.' or 'I only use manual therapy and everything else is rubbish', that's pretty narrow and inconsistent with the evidence in my view. I don't believe that electrotherapy is better than exercise or exercise is better than manual therapy. Put the optimal package together and the patient should come up with the best result. A skilful therapist is the one who pulls together the best package as well as has the skills to deliver, but that's a big ask. That's the one (therapist) I want to go and see.

Tom:

I think that the physiotherapy profession is becoming quite factional between its various biopsychosocial approach people, its manual therapists, its exercise therapists etc and, really what we all want is to deliver effective treatment for our patients

Tim:

All I was really teasing people with (at the conference) was, I was suggesting that there was a commonality between these approaches and whatever label used, whatever theoretical description you give, they might just be working the same way.

Tom:

From a personal point of view at the conference, I really enjoyed the debate and conversation between all these brilliant practitioners, academics and scientists from across the world but, one thing that I felt was missing which I think also affects treatment, is how do

you look after your physiotherapist? I've got several physios in clinic and I know what they have to do. And I know myself, if you've got poor energy or feeling under the weather and I've got 15 patients on my list, I feel that my effect on those patients is diminished, not because of the technique. But I felt that, in those conferences, there's a lot of pressure put on the physio to do better or be more well read or research-based or to be thinking about haemodynamics. They did a big thing on Cauda Equina saying 'Take this approach and do it this way' but there's nothing about you as an individual.

Tim:

Yes, really difficult. The trouble with that is it's really difficult. We all know it's there, we all know it's real and, if you're the last patient of my ten patients this afternoon, or you're the first patient of my ten, with the best will in the world, you're not going to get the same from me. But that's really difficult to measure. And in research terms, it's a 'nightmare on legs.' And that's why people find it difficult. But we all know as practitioners it's real but if you try to evaluate it and work out the magnitude of its influence well, when you try to work out the effects, how on top of it is your therapy score? We're doing a piece of research at the moment with midwives, and looking at the effect of shift pattern and duration. What impact do they have on patient care? And if you're the first patient on a 12 hour shift having a baby, or you're the last person, is your midwife as on top of it? Like in physiotherapy, that would be a stunner. I'd love to know the answer to that one.

Tom:

OK. You're a big advocate of and interested in electrotherapeutic mechanisms affecting healing. Within physiotherapy, it goes through phases of popularity. At the moment, I've heard of NHS departments getting rid of their machines, private practices buying loads of shock wave machines. I personally work in hands, and there's a war at the moment in a particular place I know because for the post-surgical scarring following hand surgery, ultrasound is known to be very effective for pain relief but the hospital policy is to get rid of all those machines. How do you feel about this faddish kind of ...?

Tim:

People don't like to admit it but some of the clinical decisions being made are made on the basis of fashion rather than evidence. The problem with electrotherapy (and I take electrotherapy in the broadest sense) is the evidence out there says it works but, there's two things you've got to get right that I spend half my time banging on about them. First, you've got to choose the right modality. If you choose shock waves when in fact, the most effective thing to do is to choose laser, you're not going to get the best result.

It's not because shock wave is rubbish, it's because that's not the best modality for that patient. So, modality choice is one thing and dose choice is the second thing. The evidence out there says, if you get it right, it makes an effective contribution. If you get it wrong, and, unfortunately, it happens, then you don't get the result you're looking for. If I was working full time clinical, I would probably use electrotherapy modalities less than most people would expect me to. To you, it sounds as if I'm always going to give electrotherapy because I'm always talking about it. The reality is that I'd be very picky about which modality I employed and when and why. But, by being picky, I would be getting the best out of the options as opposed to just using it as a way of filling up ten minutes in a treatment slot. I genuinely

don't think that electrotherapy is better than manual therapy or exercise or acupuncture but it has an evidence-based role to play and leaving it out completely then patients are missing out on some effective treatment options and that's a shame.

Tom:

Is there an absence of electrotherapy in the best practice guidelines for our profession and, if so, why?

Tim:

It might be a fashion thing. It sounds as if I'm making excuses to defend the indefensible but, if you look at TENS and back pain, the background guidelines say 'don't bother with TENS'. If you use TENS for back pain and you measure its effectiveness whilst it's on, the evidence says TENS makes a difference. The trials that get into the reviews are those for example where they might have used TENS for twenty minutes twice a week and then measured the pain at the end of Week 1, Week 2 etc. TENS doesn't work on a Monday and then you feel the benefit on a Friday. If you use TENS, the pain relief is then, not three days later, so you end up putting in research papers which are measuring outcomes that TENS is never going to achieve. Therefore, you come to the conclusion that TENS doesn't work.

Tom:

So why do you think there is this misreading of the literature?

Tim:

I don't know how to put it without appearing to be disparaging but most people with an interest in the electro-physical agents don't end up sitting on the review committees where they're making these decisions. I could sit on those committees seven days a week but it's just not possible. There are a limited number of people out there with an interest in electrotherapies so few of us with an interest. So if you combine that with the fashion, combine that with a misreading of the evidence then you get the current package.

The irony is, and it may not be on your agenda, that a lot of professional groups outside physiotherapy are picking up the different therapies and saying 'Look, the patients want this, the evidence says that it works, physios don't want to deliver it any more so we'll do it'. So just like we did with massage and exercise, we kind of gave it away, we're giving away electrotherapy, which I don't have a problem with that but we can't then moan when an osteopath starts using ultrasound for soft tissue injuries by saying an osteopath shouldn't be doing it. It doesn't belong to physios. It's out there and it works, therefore osteopaths want to pick up on it because they believe the evidence and that's exactly what they're doing. So, whilst ET is diminishing in our world, it's being picked up in other professional worlds and there's a change in who's delivering it, not in whether or not it's being delivered.

Tom:

Speaking with a colleague about manual therapies, we were having a big argument about whether manual therapy is effective or not. I always go back to? Michael's point about its effectiveness and there's good evidence for that. He was saying the argument for doing manual therapy is that, for a lot of things, there's no evidence to support it, but if we jettison it

from our profession, there's still that demand for manual therapy and people will get somewhere else though it may not be in a safe or controlled environment. I thought that was an interesting perspective.

Tim:

I think it's true. If you were completely unqualified person who wanted to call yourself say a 'back pain therapist', something that's not a protected title, you could go out, buy yourself an ultrasound and laser and shockwave, you don't need to have any training, you would have no liability cover, no insurance cover but no one can stop you delivering the treatment and I'd rather that people delivered it safely and effectively than just somebody bought the machine and plugged it in just to earn a few quid. I get criticised for teaching ET courses for non-physios. I've been teaching occupational therapists how to do ultrasound for hands and teaching osteopaths how to use NMES muscle stimulation for strengthening the quads after knee surgery and I get criticised saying 'You shouldn't be teaching these people'. But I would rather they did it with knowledge and understanding than maybe putting the patients at risk. There are physiotherapy training programmes in the UK that now teach zero ET on the three-year program. So we have students joining the profession who have no exposure to ET. I can't see any time soon it's going to pick up. In the programme at Hertfordshire, that's not what I do now, or at least, not my mainstream. The training I did in the mid-70s is very different from now and things move on. Whether that's better or worse depends on your perspective. Things change. Some of this is evidence, some of it is politics, some of it is fashion or economics. Its not just evidence.

Tom:

OK. As a senior voice in our profession, if we were to get into a time-machine and go ten years into the future, what do you think physiotherapy will look like, how will people be treating?

Tim:

I don't think that what we will see what we see currently as mainstream NHS physiotherapy stuff. That's likely to be curtailed or heavily restricted compared with now. I used to see patients in the NHS a minimum of twelve times and, if we needed more, we had it. Now, we were probably over-treating but there are certainly Trusts where, if you're referred for an appointment, you might get 2 sessions and that's a very different creature from how I would practice. I fundamentally support the NHS and think patients should get the best available physiotherapy and, that they should get it free at the point of delivery. That's my philosophy. You shouldn't have to pay to get good therapy and purely with economics, I can see the role of the physiotherapy in the NHS in the outpatient world diminishing. It upsets me because we could help an awful lot of people but it's not a cost-priority and cost is driving it. Nothing to do with how good we are. So it's going to be of a different shape.

Tom:

Could you argue that physiotherapy is not necessarily very strong? You've got physios out there saying 'ET doesn't work, manual therapy doesn't work' and you're seeing this dilution of the number of treatment sessions you're going to get, (almost the pillars of what physio has delivered) are being denigrated within the profession itself. Then I look across to see

our colleagues in medicine e.g. shoulder surgeons or knee surgeons. For example, in knees, arthroscopy knee surgery for degenerative meniscus is known to be ineffective, and exercise better than many types of shoulder surgery. But there's zero chance that you'll get any of those professions to say 'OK, we'll stop doing surgery'. Their view seems to be we'll look at it more and do it better until we get a better result.

Tim:

I agree that there's an awful lot of surgery that's ineffective but there's an awful lot of physiotherapy that's ineffective. But surgeons appear to have more political will, a stronger political drive to maintain a position in the NHS. Physios, from my stand-back position, appear not to have that drive. Therefore we're not looking to defend, make ourselves of value but accepting 'Well, if we can only have two treatments, that's what we have. We'd like ten but hey, give us two and we'll make do with it.' I'm not saying that all our patients need ten sessions but, with many, you can't get a result in two sessions. Not unless the physios coming through now are a billion times better and I'm just a rubbish physio. However good I think I am, we can't get a result in two sessions with everybody. There are people who need 'hands-on', who need manual therapy or electrotherapy and who need to be dragged into their recovery and there are others who will go away, do their exercises and recover. If we don't have the flexibility and the ability of choosing who needs one session and an exercise sheet and who needs six sessions including some hands-on. That's where we're failing.

Tom:

Some say as a profession, we need to be screening our patients. For instance, people who have co-morbidities tend to do less well better with hands-on treatment and better with bio-psycho-social treatments whereas, a different demographic tend to do really well with or passive treatments.

Tim:

I've got a Twitter feed and I put out two research papers every day. One of which is always a review and one of which is always a piece of original research. One of the ones I put out today was a systematic review and a meta-analysis about tendinopathy. It demonstrates without doubt that there's a strong link between patients with diabetes and their tendinopathy. If you've got tendinopathy and you're diabetic, you're less likely to benefit from therapy because of the diabetes. It doesn't matter however well I do the therapy, the patient is materially disadvantaged because they're diabetic. We should be taking that kind of stuff into account. We talk about responders and non-responders. There are these to every therapy. The sooner we recognise that and deal with it the better. We'd be much better as a profession if we said 'Sorry matey, the combination you've got means, no matter what I do to you, I'm not actually going to make a difference until your diabetes is stabilised'. I would say to another patient who appears to have the same problem 'Yes, we're going to put you through an exercise programme, starting tomorrow, because you're in a responder group and you could respond right now'. We don't like doing that as a profession. We're not good at that but medics do that because, there are responders and non-responders, and they're playing the game in a very professional sense.

Tom:

So, Tim, we've deviated slightly from talking about the course. Tell me briefly why someone should come to your Tissue Healing Course in Sheffield on the 3rd September.

Tim:

Because, we're going to look at 'how is the body supposed to mend after injury, after surgery, after trauma, after insult.' How is the body supposed to mend when you do therapy? Which bits of therapy make a difference to that process and how can we get the optimum response from patients by combining the therapy, based on the evidence? I'm not going to sit there and read out 500 references. It wouldn't cover it all and everybody would be asleep. I want to build the whole thing around evidence-based trip through the healing process and integrate that, all the way through so, at the end of it, one should know, understand and appreciate more about tissue repair with a therapy orientation not 500 chemicals for the sake of learning 500 chemicals. But more, if you've got somebody in the inflammatory state, what can you do that will help? And, we're not trying to turn it off, we're trying to get through the inflammatory state and what's the most effective way of doing that job and use the evidence in the most understandable way. The same with the repairing bit and proliferation, the same with remodelling, and bringing repair quality into the equation and if somebody wants to go and read however many pages I've got on tissue repair, I've got a database of 240000+ papers and, yes, I'm a complete 'saddo'. I'm just trying to take thousands of papers and make them understandable and digestible without you having to read all of them. That's it. The evidence is out there. No one needs to come on the course if they're prepared to read all the papers and integrate them into their practice. If you don't want to do that, I'm taking some of the donkey work out of that process and trying to demonstrate how good an evidence base we've got.

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