The Maitland concept: are we throwing the baby out with the bathwater?

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Arguably, hands-on mobilisations are as appropriate in the physiotherapists' toolbox as they have ever been. This article tracks the history of manual therapy and demonstrates how it still fits with current clinical thinking, with the aim that readers will take the opportunity to critically reflect on their use of hands-on skills within their own practices and, by improving on our manual therapy methods, we can not only achieve better patient outcomes, but also preserve this skill for our profession.

LEARNING OUTCOMES

- 1 Be aware of the history of the physiotherapist training in manual
- **2** Consider the relevance of manual therapy in the education and training of current physiotherapists.
- **3** Reflect on how we might be part of the education process for sharing our manual therapy skills with
- 4 Explore ways to preserve our manual therapy heritage for the

Introduction

In his brilliant and thought-provoking article, Jones (1995) observes that: "It is interesting to reflect on misdirections that have occurred throughout the history of science, largely due to a lack of critical and open inquiry, two essential elements of clinical reasoning."

Despite being written almost 30 years ago, it is a very astute and sobering point that strongly resonates today.

Jones (1995) adds that: "The power of any paradigm that dominates a discipline is enormous. Research and treatment practices will be directed by the prevailing paradigm and if it is in error, the advancement of science and healthcare can be misdirected. As a

profession with its clinical theories being based on a combination of scientific rational and quasi empirical approaches, physiotherapy is also vulnerable to misdirection. A principal fault behind many of the colossal misdirections through the history of science has been the blind acceptance of what is written or professed as truth at the time."

Is it possible that Jones' concept has become the case for musculoskeletal (MSK) physiotherapists to increasingly prefer exercise and self-management advice protocols as treatment modalities over "hands-on" manual therapies? This article aims to generate discussion and argument to challenge this notion, using the Maitland concept and Maitland's mobilisation techniques as an illustration.

The Maitland concept

For those unfamiliar with the Maitland concept and Maitland's mobilisation techniques, Geoff Maitland is an Australian physiotherapist who, around 1970, developed the Maitland concept with the purpose of providing an analytical framework that not only helped the physiotherapist to more accurately assess a patient presenting with an MSK problem, but also to provide a clinical reasoning tool for selecting the most appropriate treatment techniques to optimise improvement in the patient's signs and symptoms for recovery, and for evaluating the effectiveness of

the treatment. In his book Peripheral Mobilisation, Maitland uses the metaphor of a "permeable brick wall" that has two-way interdependent sides to explain that: " ... it is because much of the medical theoretical knowledge (such as the diagnosis, pathology, biomedical engineering, etc.) is still incomplete, that it should not be given any opportunity to obstruct the search for all of the appropriate clinical facts associated with the patient's disorder (that is, it's history, it's subjective presentation and its effects on his movement" (Maitland 1991).

The physiotherapy skills gap

It has become increasingly alarming to observe that the emphasis on MSK physiotherapy within the NHS setting has been to veer away from providing manual therapy treatments. The focus instead seems to be on the provision of guided exercise programmes, advice, and educating patients to better understand and self-manage their symptoms.

Unlike osteopathy, chiropractic, and sports therapy undergraduate students, those studying physiotherapy in the UK no longer receive regular, if any, practical manual therapy skills as part of their undergraduate training. This suggests that a physiotherapist can only develop these skills through a specific postgraduate manual therapy course, but this reduces the opportunity to implement and consolidate such skills

within the workplace, and to access mentoring to facilitate and optimise their competence, and confidence in using their skills effectively.

At the time of writing, a quick scan of the CSP's Frontline journal reveals that, of all the possible manual therapy techniques courses advertised a few years ago, there are now only two offering hands-on skills training through the Mulligan concept, and only one online notification of a three-day integrated manual therapy course. On the other hand, Google search results include sports massage therapists offering two-day Maitland joint mobilisation courses as part of a manual therapy training module. What then is happening to our future as handson therapists? How has it come about that we are apparently handing over some of the hard-earned jewels in our manual therapy toolbox to other professions, lock, stock and barrel? Are we, as a profession, throwing the baby out with the bath water?

Personally, like many other physiotherapists who qualified well over a decade or more ago, I have been incredibly fortunate to have trained in what seems now to be a golden era of manual therapy; a time when practical, hands-on manual therapy techniques were an essential and core part of the physiotherapy undergraduate curriculum, and included hours of practice, week after week during a three-year diploma or four-year BSc course. Our competency was then assessed and we were required to achieve a certain level to pass the course modules.

Once qualified, there were a wealth of manual therapy postgraduate courses in mobilisation techniques from Maitland, Cyriax, McKenzie and Kaltenborn, and Mulligan with which we could further expand and develop our skills. Later, training in concepts such as muscle energy techniques, neural mobilisation, connective tissue and myofascial release encouraged newly qualified physios to develop and improve therapeutic skills and we were eager to do so, using training sessions to practise on each other to consolidate what we had learned.

In the early 1980s, I was immensely privileged to have undertaken my MSK outpatient placement at Guy's Hospital School of Physiotherapy with Anna Edwards, a physiotherapist who had studied with Geoff Maitland himself, and who was passionate about his teachings. She ensured that each of her students not only understood the principles of the Maitland concept but could translate this practically with our palpation and treatment technique which she would make us practice on her.

Anna taught her students to listen to, and feel with their fingers, the response tissues and joints made to touch. She also taught us to keep an open mind and think "outside the box"; just because there might not be a scientific explanation for a palpation finding, doesn't mean that the finding isn't true or valid and someday there may well be evidence to support what you find. She also always stressed that in the absence of any available evidence, one's own clinical evidence, supported by well-documented subjective and objective outcome measures and clinical reasoning, is invaluable. This has been the absolute bedrock and foundation for my clinical practice ever since.

Since qualifying, I have been on many courses and been excited by a variety of manual therapy techniques and approaches, and over the years I have magpied many of these competencies into my therapeutic toolbox. However, the basic bread and butter of my daily clinical practice has always been, and continues to be, Maitland mobilisations.

Now, many "patient miles" later, I am exploring and re-evaluating whether the Maitland concept and Maitland's mobilisations still have a place in current private physiotherapy practice

and the continuing development of our profession, especially given the limited, if any, opportunities for these skills to be developed within the NHS.

Whilst I wonder if I am in a dwindling group who still use the Maitland technique, online research on the subject is encouraging. There are eight editions of the book Maitland Vertebral Manipulation, and five of Peripheral Manipulation.

The online physiotherapy knowledge resource Physiopedia includes a section describing the Maitland techniques, and several private physiotherapy and sports massage practices explain the Maitland concept in the patient information sections of their websites.

There are also recent research studies that explore the effectiveness of Maitland techniques in comparison with other manual therapy modalities for a range of conditions such as back pain (Phelan et al 2020; Shah & Kage 2016), neck pain (Lee & Lee 2017; Shabbir et al 2021; Suri et al 2018), osteoarthritic knees (Li et al 2022; Samal et al 2021), frozen shoulder (Shamsi 2015), temporomandibular joint disorders (Deguire et al 2021), joint hypermobility (Pennetti 2018), and postcancer treatment (Bhatikar & Bhodaji 2018; Pattanshetty & Patil 2022). Many of these studies now seem to be originating from India, Pakistan and the Far East.

Maitland and the patientcentred approach

Maitland's permeable brick wall concept was at the forefront of the biopsychosocial and patient-centred approach we use today. Evaluating the effectiveness of manual therapy techniques can be difficult owing to the many confounding variables, including, for example, how we communicate verbally and non-verbally with our **②**

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patients, that can influence the results of our interventions. Maitland, therefore, understands that it is necessary for us to question what we do and think laterally about what might affect our patient outcomes (Maitland 1986; Bremer 2017).

Similar to many other manual therapy approaches, Maitland emphasises the absolute necessity of the subjective examination in which a thorough and detailed medical history is taken, together with the patient's concerns and expectations. This not only guides the objective physical examination but also alerts the physiotherapist to any possible contraindications to using any chosen treatment technique(s).

However, Maitland also stresses the importance of palpation responses, including through passive mobilisations, as an essential component of the objective examination, both in locating the source of signs and symptoms, and in ascertaining any movement abnormalities, such as hypomobility or hypermobility of a joint (vertebral or peripheral), and surrounding soft tissue. The International Federation of Manipulative Physical Therapists (IFOMPT) defines joint mobilisation as: "The application of passive movement techniques in joints both manually and mechanically, slowly and rhythmically, according to the patient's needs". In addition, Angiatt et al (2020) describes that the palpation rhythm may be in the form of oscillation (repetition) or a steady stretch, and further qualifies this by adding that: "Joint mobilisation is carried out by paying attention to symptoms such as pain, muscle tension and end feel stretch."

Palpation techniques performed with passive movements can be used on either soft tissues or passive accessory movements of a joint that are described as either a roll, glide, or spin of the joint surfaces or arthrokinematics of a joint (Sharma et al 2021). A hypomobile structure could be limited by pain, spasm or resistance with an interplay of any or all of these three components that affect its quality.

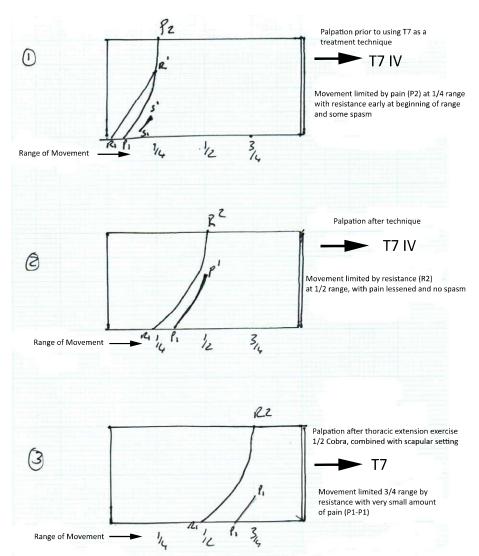


FIGURE 1: Movement diagram illustrating progression from pre-treatment (graph 1), to posttreatment (graph 2), to post-exercise (graph 3)

Maitland also developed "movement diagrams" as a teaching tool (figure 1) for clarifying:

- (a) where and how the interplay between pain, spasm and resistance occur in a range of joint movement, e.g. a posterior-anterior glide, and
- **(b)** for identifying the principal factor limiting the range of available movement and, therefore, its "end feel".

THE MAITLAND TREATMENT **TECHNIQUES**

Maitland's treatment techniques involve small oscillations of a joint, the amplitude and depth of which are determined by whether pain, spasm or resistance is the limiting factor. To help clarify this, Maitland established a grading system of I-IV which relate as

- Grade I = a small amplitude movement
- Grade II = a large amplitude movement

- within a resistance free part of the range
- Grade III = a large amplitude movement
- Grade IV = a small amplitude movement into and up to the end range of resistance.

These grades can be further expressed as ± depending on the vigour of the technique used and whether it is performed early into resistance, or more towards the end range of resistance. Grades I and II are used predominantly to treat pain and spasm and when a joint has a higher level of irritability, whereas grades III and IV are mainly employed for non-irritable mechanical tightness / stiffness.

Additionally, when a high-velocity thrust technique is used at the end of the available range of movement, this is classified as grade V.

Maitland (1991) states that: "When a technique is initially used in treatment, it is commonly employed in an exploratory manner to determine the response of the joint. Hence the treatment movement is continually modified to meet the demands of the condition. The movements used may vary in depth, gradually moving in deeper or receding according to what is felt at different depths. This exploratory technique is an extension of passive movement examination."

He adds that: "There are hundreds upon hundreds of techniques. Preferences vary from therapist to therapist, but the important thing to remember is that the speed, amplitude, pain response during performance, pathology and diagnosis all have an influence on HOW the technique is performed. Essentially, we must endeavour to be guided by what is happening during the performing of the chosen grade and rhythm, and also what the patient feels as a response."

As an early pioneer not only for advocating a clinical reasoning approach, but also one in which the patient was very much at the centre, Maitland encouraged clinicians to respond to the patient's story of their presenting MSK problems by supporting them to actively contribute and collaborate in their treatment, and report back on their responses to the therapist's palpation findings and any chosen treatment technique.

Deguire et al (2021) further support this approach through a case study in which they applied the Maitland concept of clinical reasoning to treat a patient with a temporomandibular joint disorder, observing that "patient centric evaluation uses the patient's signs and symptoms, coupled with hands-on evaluation using active physiological movements and passive accessory movements to find the patient's comparable sign that relates to their main complaint". Maitland describes the comparable sign as a "joint or neural sign that is any combination of pain, stiffness and spasm that the clinician finds during examination and considers comparable with the patient's symptoms". Additionally, the Maitland concept emphasises the importance of ascertaining three defining factors in the patient's presentation:

- 1. Severity
- 2. Irritability
- 3. Nature.

These three factors, known by the acronym SIN, help determine how to treat the patient in a way that maximises any improvement, and does not exacerbate their symptoms (Barakatt et al 2012). Whilst there are various accepted and well-recognised outcome measurements for pain and functional disability, there are no measurement constructs for assessing the irritability of a patient's symptoms, yet it is this that informs and guides the clinician on the safe level of any given treatment technique, exercise prescription and activity that is appropriate for a patient. Barakatt et al (2012) argue, however, that more refined ways need to be developed for assessing the clinician's judgements of irritability, e.g. with "an irritability spectrum", and that this "could facilitate blending Maitland's widely used treatment paradigm with current evidence-based practices".

RESEARCH INVOLVING MAITLAND TECHNIQUES

As previously mentioned, there have been many studies highlighting the effectiveness of Maitland's techniques and how they can be even more effective when combined with other treatment modalities (Lee & Lee 2017). However, there are studies that also question Maitland's grading system, the use of movement diagrams, and also their accuracy with inter- and intra-therapist reliability. Petty et al (2002) propose that the minute a tissue or structure is palpated, pressure is created. They therefore argue that the beginning of grade I resistance occurs very early on in the joint range of movement and so all techniques are classified as grade III and IV, which confuses the concept and the validity of grades I and II. It may also account for why almost all my own techniques over the years have been noted as grade III and IV, whenever I

encountered any resistance very early in the range of movement.

Chester et al (2003) undertook a study to evaluate the ability of physiotherapists to perform a graded mobilisation on a simulated spine. They recorded the displacement and amplitude of every oscillation used by each therapist and found that there was significant overlap and variation in the different grades used between physiotherapists, and so concluded that Maitland's grading system was unreliable. Despite these findings, this grading system has given me, and no doubt many other physiotherapists, an invaluable gauging and clinical reasoning tool and, however imperfect it may be, it has become well honed over the years and guided and improved the sensitivity of my own palpation techniques for deciphering just how much I can safely do with a patient whilst ensuring I minimise any adverse effects.

This observation, borne out of years of my clinical outcomes, is supported by two studies; Jull *et al* (1997) on interexaminer reliability to detect upper cervical joint dysfunction resulting in cervicogenic headaches, and Rollins & Robinson (1980) on the ability of physical therapy students to accurately identify Maitland's grades I-IV.

Although there was some initial confusion in distinguishing the grades in both these studies, unlike Chester *et al* (2003), the authors found an over 90% accuracy both visually and kineasthetically when the Maitland techniques were performed. This may support the argument that resistance begins early in the range (Petty *et al* 2002), as the studies highlight that the soft tissue must be taken into account before mobilisation of the joint to minimise any confusion in differentiating grades I and / or II with a grade III and / or IV.

As several systematic reviews point out, there are a multitude of Maitland comparison studies, e.g. with Mulligan (Li et al 2022; Gautam et al 2014; Reid et al 2014; Shamsi 2015), Mackenzie exercises (Shah & Kage 2016), and progressive resistance exercises (Sharma et al 2021).

These cover a wide variety of areas of the body, including the lumbar spine and back ache, the cervical spine and headaches, temporomandibular joint disorders (Deguire et al 2021), and shoulder and knee (Samal et al 2021) which makes it hard to conduct a systematic review.

As there is comparatively little research into the effectiveness of our manual therapy techniques, it is all the more important that we develop accurate clinical reasoning tools for creating our own evidence when there is little supporting evidence for our clinical findings (Jones 1995). This necessitates putting the patient at the centre of their treatment, and them becoming a partner in our clinical decision making process. Rollins & Robinson (1980) expand on this approach by stating that once a physiotherapist has mastered the basic Maitland techniques, variations can be used that involve "correlating basic skills with the patient's condition and the therapist's developed skills".

In a more recent review of the Maitland concept and techniques for low back pain, Outeda et al (2022) unearthed 894 studies, published between 2016 and 2021, of which 15 were considered suitable to include in their systematic review. Seven of the studies compared the effects of Maitland's mobilisations with different exercise programmes, and they found that manual therapy used alone, or combined with exercise, produced a reduction in pain and disability and an improvement in the patient's function in the short term, i.e. within a six-week period.

The authors concluded that there was solid evidence that both Maitland's mobilisations and manipulations "applied alone or in conjunction with other interventions, reduce pain and disability in subjects with low back pain". They also highlighted the importance of combining exercise and self-management strategies with manual therapy. In the absence of studies on the long-term benefits on low back pain, further research was advocated. Furthermore,

the findings did support other studies that suggest early physiotherapy intervention not only reduces chronicity in patients, but also reduces the need for analgesia, and increases adherence to treatment interventions. It also helps to reduce anxiety, depression and distress in the short term. It was noted that some studies looked at the effects of Maitland's mobilisations on spinal stabilisation muscles, e.g. transversus abdominis and multifidus, and found that that muscle strength was not necessarily improved, whereas other studies had identified an improvement in neural control, and that reduced neural inhibition helped to minimise any instability in these muscles.

One of the limitations of their review, as highlighted by Outeda et al (2022) was that many of the studies used different questionnaires and scales for the same variables which made it more difficult for them to compare their results.

In 2017 Lee & Lee, researched chronic neck pain in patients in Korea and compared, over a two-week period, the effects on one group who undertook therapeutic exercise, e.g. mobility, stability and strengthening, with a second group using both therapeutic exercises and Maitland's grade III and IV treatment techniques. The grade chosen was dependent on the patient's condition. Both groups were found to have improved range of motion and decreased pain but the second group showed even greater pain reduction and range of cervical motion. A more recent randomized controlled trial (RCT) of Maitland mobilisation techniques (Shabbir et al 2021), discovered similar findings in patients with myofascial chronic neck pain who undertook treatment over an eight-week period. Again, one group received Maitland's techniques ranging from grade I to IV, whilst a second group received mobility and strengthening exercises. The results indicated that the Maitland techniques were effective in reducing pain and improving range of neck movement.

Whilst some studies have found that Maitland is as effective as Mulligan's

sustained natural apophyseal glides (SNAGs) for the treatment of cervicogenic dizziness (Reid et al 2014), others argue that Mulligan is more effective (Khan et al 2018). However, as this study compared SNAGS in three directions of lumbar movement with Maitland's grade I and II glide mobilisations on three spinous process levels, and did not explore or progress to grades III and IV, it could argue that the conclusion reached by Khan et al (2018) was not valid in its comparison.

Similarly, Gautam et al (2014) compared Maitland with Mulligan for patients with neck pain over a 30-day intervention period and found that the patient group who received the Mulligan technique had a better range of movement, and less pain than the group who received Maitland's mobilisations. Both groups fared better than the control group who received conventional therapy. The authors concluded therefore that Mulligan is better than Maitland for the treatment of neck pain. The Maitland group was, however, offered only grade II techniques throughout the period, with no adaptation nor progression of the grades or technique.

Maitland's premise was to adapt one's techniques to the response of the joints and tissues so, for a patient who is improving, and their pain lessening, it would not necessarily be the choice to employ grades I and II. This is reinforced when Maitland notes: "Although it is necessary to have a basis of techniques from which to teach, the clinician must be totally open minded and capable of adapting and modifying techniques to achieve the purpose for which they were chosen in relation to movement and pain" (Maitland 1991). As Maitland's mobilisation techniques form an integral part of his critical reasoning concept, has this been lost in translation and been misunderstood?

In contrast to Khan et al (2018) and Gautam et al (2014), Reid et al (2014) report that "the grade and duration of the Maitland technique used were determined by clinical judgement". This is more in keeping with the ethos of clinical reasoning and the Maitland approach.

Later, Outeda et al (2022) point out that the Maitland concept and brick wall theory is about applying a continuous clinical reasoning process; something which Jones (1995) had already identified as continuing throughout the period of ongoing treatment intervention. Jones (1995) also highlights that "at the micro level clinicians are constantly reading patient responses and making in-treatment clinical decisions to modify and improve their actions. At a macro level whole treatment sessions or even multiple treatment will be used to test various hypotheses".

As Deguire et al (2021) illustrate, the clinician "...needs to consider all regions that could potentially be the cause of pain...". Whilst Jones (1995) was already arguing that "physiotherapy has come under criticism in recent years for its attempt to extrapolate pain science to clinical practice without validation", and wondering "should clinicians and patients wait for theory and practice to be validated?".

Ultimately, Jones (1995) suggests a balance, in which clinical ideas should be encouraged and shared but not necessarily accepted as fact, and that clinical reasoning is the foundation of professional clinical practice. Jones (1995) also proposes that clinical patterns emerging from assessment findings and treatment interventions "require hypotheses generation, hypothesis testing, re-assessment of interventions and most importantly reflection and, as physiotherapists, we need to continue to generate new ideas. Lateral thinking involves a re-structuring and an escape from old patterns as well as the creation of new ones. To promote creative, lateral thinking the physiotherapist must first be able to recognise the dominant idea or existing approach toward a problem and then look outside it to explore alternative ideas or solutions." This endorses / reinforces Maitland's argument that "... there are no set techniques or invariable techniques; there are no times when a teacher can say 'always do it this way'. The only MUST is that the technique

must achieve its intention both while and after it has been performed. The clinician's mind must always be open; the teacher must never be dogmatic."

In conclusion, Jones (1995) states that "reflective clinicians and researchers who have both logical and creative thinking abilities will continue to contribute to the advancement of pain management. Clinical reasoning in the future should include increasing open mindedness and breadth of thinking styles. Where practice is dominated by reasoning-deficient adherence to routines or politically motivated allegiance to one approach, we need greater critical thinking and theoretical pluralism..."

THE RELEVANCE OF MAITLAND TODAY

Having undertaken this preliminary investigation into comparative studies of the Maitland concept and techniques, it has been encouraging and validating, as a MSK physiotherapist, to observe that Maitland techniques are still being practised and researched internationally, and also evaluated positively with other manual therapy techniques and treatment modalities, such as exercise and self-management interventions. Although there are those that dispute Maitland's efficacy and reliability (Chester et al 2003; Petty et al 2002), or observe that the findings are limited and contradictory (Outeda et al 2022), many studies and systematic reviews conclude that Maitland techniques, together with other manual therapy modalities, not only produce an improvement in the patient's condition, but when used in conjunction with other interventions such as exercise prescription, further enhance the improvements achieved by these modalities (Outeda et al 2022).

So, having questioned at the start of this article whether the Maitland concept

still has a place in private physiotherapy practice, I would conclude, very much so! Maitland incorporates the palpation findings as a component of the examination and provides both a clinical reasoning tool and a framework for creating and structuring evidence drawn from clinical findings, especially where the research is lacking. The passive movements can be used as a technique which guides and adapts to the response of the joints and tissues. These are all valuable elements that form part of a skills toolbox that enables the therapist to achieve effective results. As Jones (1995) highlights: "Clinicians are increasingly being challenged to research and substantiate their clinical beliefs. This will greatly assist in advancing our understanding of what we do and assist us in identifying truly effective treatments from fad, fashion or placebo. However, clinicians must never lose the ability to treat patients empirically and explore patient problems through assessment and treatment."

Conclusion

There are many manual therapy techniques to choose from, not just Maitland's mobilisations. However, we as a profession are now in danger of our manual therapy skills being lost to us and taken up by other health professions. Particularly for MSK physiotherapists in private practice, now more than ever is the time for us to lead the way by providing the evidence and clinical reasoning to prove the effectiveness of our manual therapy skills and so help to keep them alive and blossoming.

Whilst this article cites a number of studies which have a range of findings, and some limitations in assessing the Maitland concept, we should ask whether RCT and other quantitative research methods are the best way to evaluate our

Output

Description:

"NOW, MORE THAN EVER, PHYSIOS IN PRIVATE PRACTICE MUST LEAD THE WAY IN PROVIDING EVIDENCE AND CLINICAL REASONING TO PROVE THE EFFECTIVENESS OF OUR MANUAL THERAPY SKILLS"

manual therapy skills anyway. The interaction and communication between the therapist and patient is a very powerful confounding variable when it comes to the results we achieve, and the use of manual therapy puts us in the unique position to use our skills, resources and clinical reasoning to both preserve our manual therapy tradition and forge ahead in creating new techniques. As Maitland so passionately championed, it is essential to have an open-minded attitude, to be able to innovate and improve, unhindered by theory.

Physio First has recently set up Skills Exchange; a new programme that invites physiotherapists of all ages and levels of experience to meet, discuss, learn and practice from one another in a safe space environment. Each Skills Exchange event encourages experienced manual therapists to share their hands-on techniques and learn from those more recently graduated how they view the future of our profession. In addition, the Physio First Data for Impact project provides participating members with evidence of unspecified manual therapy modalities used in patient treatment interventions.

In the seeming absence of the proactive support and endorsement from the CSP of provision of manual therapy modalities in the undergraduate and postgraduate syllabus, the Physio First initiatives may be at the forefront of advancing and safeguarding our professional manual therapy identity, not just for ourselves but for future generations of physiotherapists working both in private practice and the NHS.

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