

The Demonization of Manual Therapy

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“Demonization” is what American physical therapist and professor Dr. Chad E. Cook calls the criticism of manual therapy that has grown louder in recent years. He addresses eight of these demonizations and carefully evaluates them based on the current literature. His purpose with this article is to spark discussion, dispel false assumptions, and provide patients with evidence-based therapy.

Introduction

In medicine, when we do not understand or when we dislike something, we demonize it. Well-known examples throughout history include the initial ridicule of antiseptic handwashing, percutaneous transluminal coronary angioplasty (i. e., balloon angioplasty), the relationships between viruses and cancer, the contribution of bacteria in the development of ulcers, and the role of heredity in the development of disease. In each example, naysayers attempted to discredit the use of each of the concepts, despite having no evidence to support their claims. The goal in each of the aforementioned topics: demonize the concept.

Demonization: to portray as wicked or threatening

Recently, there has been a systematic and thorough demonization of manual therapy [1][2]. Some concerns and opinions that have gained in popularity have supported the condemnation of manual therapy by many. These include the assumption that there are no specific effects associated with manual therapy [3]. One specific blogger has indicated that manual therapy has the potential to create reliance and/or dependency [4] and that some patients can associate the temporary pain-reducing effects that these interventions create as essential and necessary to continue, leading to a waste of time, money, and lower self-efficacy [4]. Many have expressed that manual therapy only provides short-term changes [5] and these changes don't extend to long-term changes. Others have concerns that manual therapy interventions are based on outdated, incorrect philosophies [6] that are elitist and unnecessary separatist. A blogger has implied that “elite” manual therapists lack skill in management strategies associated with empathy, reassurance, and communication and default to manual therapy because they are fearful of address-

ing these [4]. Some claim that because manual therapy involves passive techniques, it does not fit within the value-based care paradigm [7]. Others express concerns that manual therapy isn't safe, is dangerous to its recipients [8], and on rare occasions actually causes death [9]. Lastly, another narrative involves the assumption that manual therapists cannot identify unique candidates for care, suggesting that the treatment, in turn, isn't effective.

The purpose of this manuscript is to address some of the concerns about manual therapy and touch on suggested use in clinical practice. It is my hope that this paper will generate discussion and eventually reduce the ineffective, inefficient assumptions and false speculations that many clinicians have acquired over the last decade [1].

Demonization One: Manual Therapy has No Unique Specific Effects

We will start with this demonization, as it is the easiest one to debunk. Specific effects are those that are unique to the application being provided. The specific effects of manual therapy have been studied in multiple human and animal studies [10][11]. The most common specific effects affiliated with manual therapy are those that influence pain modulation. Pain modulation is the process by which the body alters a pain signal during transmission along the pain pathway [12]. Because pain is modulated within the body in multiple ways, there are also numerous mechanisms in which to modulate one's pain (e. g., exercise, modalities, drugs, mind-body interventions) [10].

Manual therapy is just one of many ways to modulate pain.

Formal human and animal studies have shown that manual therapy techniques increase arachidonylethanolamide

and N-palmitoylethanolamide (both are cannabinoids) [13], increase B-endorphins including Dynorphin, increase orexin-A, and decrease neurotensin. Manual therapy techniques mediate serotonin and norepinephrine levels, adenosine, and other non-GABA neurotransmitters [10]. A recent theoretical model suggests that a mechanical force from manual therapy initiates a cascade of neurophysiological responses from the peripheral and central nervous system, which are then responsible for both mechanistic and clinical outcomes [14]. In summary, there is so much literature on the pain modulatory specific effects of manual therapy that it's incredulous to reconcile why someone would say that it has no known specific effect. Arguably, this is the strongest validating feature of manual therapy and certainly the one that has been most investigated.

Demonization Two: Use of Manual Therapy Leads to Patient Reliance and Dependency and Subsequent low Self-Efficacy

This opinion was placed in writing on a website [4], but to be fair, it's one that I've heard numerous times over the last two decades during interactions with care providers. Most likely, this assumption is grounded in the highly publicized relationships between psychological disorders and food addictions [15], drug addictions [16], and alcohol dependencies [17]. However, it's also a possible example of the reiteration effect, which is the tendency to believe false information to be correct after repeated exposure [18].

To my knowledge, there is no known evidence to support this assumption. In fact, an ongoing scoping review of the literature coordinated by a professional biomedical librarian did not find a single causation-based study that has explored this concept. Nor was there a single associational-based (non-causative) study that was found in which the primary research question was related to the development of dependency associated with manual therapy. In other words, there is no written evidence to support this claim.

There are no studies to date that demonstrate that MT leads to lower patient self-efficacy.

Furthermore, self-efficacy, which refers to an individual's belief in their capacity to execute behaviors necessary to produce specific performance attainments [19], is a complicated construct, and it is unlikely to be mediated by the use of manual therapy. In fact, it's probably the opposite; it's more likely that individuals with low self-efficacy seek interventions that are passive in nature, including

passive pain modulatory mechanisms [20]. Manual therapy doesn't cause low efficacy, individuals with low efficacy are more likely to seek analgesic drugs, passive activities and potentially, manual therapies.

Demonization Three: Manual Therapy provides only Short-Term Changes, which do Not Equate to Long-Term Changes

Indeed, manual therapy approaches do have a short-term effect [5]. This has been explored comprehensively by a wealth of studies. The number of immediate effect studies in manual therapy prompted an editorial that expressed concerns about the value associated with these studies. This is because multiple interventions have short-term effects; some of these are dubious in context [5].

Short-term changes, especially those that carry over beyond immediate effects have been linked to a good prognosis [21]. Numerous studies have identified that early and continued change (to the next treatment session) is related to a better prognosis than those who do not exhibit a change from early session to session [22][23][24][25][26][27][28]. This finding involves a positive or negative within-session (during the same session) or between-session (after the patient returns) response from a dedicated procedure. The clinician uses the within- and between-session findings to adjust their treatment dosage, intensity, and application for the optimal targeted result.

Rapid changes in symptoms at the start of therapy are associated with a good prognosis.

It is important to recognize that these studies included manual therapy as the primary treatment technique but did not include a control technique to see if the effects were specific to manual therapy [22][23][24][25][26][27][28]. Consequently, it is appropriate to mention that early change is prognostic, but whether or not the change is specific to manual therapy requires additional study. This ability to change rapidly may be related to the patient's endogenous pain modulating capacity, a term known as pain adaptive behavior [29].

Being pain adaptive means a person has the ability (endogenously, within their body), to modulate pain without the help of medical interventions. Pain adaptive individuals often respond very quickly to pain but can endogenously pain modulate very rapidly—often during the session of care. Pain adaptability has been measured using experimental techniques, such as undergoing a 5-minute cold pressor test (performed by immersing the hand into an ice water container and then measuring signs and symptoms).



Manuelle Therapie Manual Therapy

► **Fig. 1** IFOMPT (International Federation of Orthopaedic Manipulative Physical Therapists) defines manual therapy techniques as “skilled hand movements intended to produce any or all of the following effects: improve tissue extensibility; increase range of motion; mobilize or manipulate soft tissues and joints; induce relaxation; change muscle function; stabilize the joint complex; modulate pain; reduce soft tissue swelling, inflammation or movement restriction” [31]. (© Thieme Group/Susi Schaaf)

Pain adaptive individuals reported a fast increase in pain, then a significant reduction of pain intensity by at least two out of ten points on an 11-point pain scale at the end of the test [30]. In contrast, non-pain adaptive individuals have slower increases of pain to cold pressor and the pain remains high throughout the test.

Demonization Four: Manual Therapy Techniques are based on Outdated, Inappropriate Philosophies that were derived to Support a Guru’s Theories

Sadly, this demonization is mostly true. Although manual therapy techniques are well defined according to IFOMPT as “skilled hand movements intended to produce any or all of the following effects: improve tissue extensibility; increase range of motion; mobilize or manipulate soft tissues and joints; induce relaxation; change muscle function; stabilize the joint complex; modulate pain; reduce soft tissue swelling, inflammation or movement restriction” [31] (► **Fig. 1**), it is characterized by a number of different interpretations within that definition. There are multiple philosophies associated with dedicated manual therapy approaches, within and between professions, and supporters often hold these philosophies sacred. In addition, many of the traditional theories that have been em-



► **Fig. 2** There is an urgent need within manual therapy to move away from outdated concepts and adapt the theory and philosophy behind manual therapy to emerging evidence. (© Thieme Group/Susi Schaaf)

ployed in the manufacturing of a manual therapy philosophy have not held up in a modern scientific investigation. Concepts such as the convex-concave rule [32][33][34], isometric tension testing [35], Cyriax's capsular patterns [36][37], Cyriax's end feel classification [38][39], coupling patterns of the spine [40][41][42], and assessment of passive accessory intervertebral movements [43][44][45][46][47][48] either lack agreement among clinicians or lack validity. Further, concepts such as "subluxations" have not been shown to exist outside of the philosophical suggestions of professional society [49][50].

The dogmatic philosophical framework of many approaches and a failure to adapt toward a modern understanding of manual therapy mechanisms has influenced how clinicians feel about manual therapy as an intervention. It has also given manual therapists the stigma of being separatists, elitists, and obsolete. Philosophies must adapt to emerging evidence and divorce themselves of dated concepts created in the absence of verification through research (► **Fig. 2**). This will likely lead to a homogenization of manual therapy concepts, one adopted by all populations and one that is transferable to clinical practice, regardless of ones' training.

Demonization Five: Manual Therapists lack Skills in Communication, Reassurance, and Empathy

This demonization is highly unlikely (► **Fig. 3**). In most countries, manual therapy designations require supplementary training and years of additional experience. In most cases, the clinicians are highly motivated, advocates for their profession and their patients, and have received additional training associated with pain neuroscience. In the United States, most individuals who are manual therapists are also board-certified orthopedic specialists, and these individuals are more inclined to follow clinical practice guidelines [51]. In the Netherlands, manual therapists have long shifted their clinical focuses to evidence-based management methods [52].

In truth, many of the concepts associated with the values of communication, reassurance and empathy, are advocated in pain neuroscience education. A recent study actually supported the combination of pain neuroscience education, manual therapy, and a home exercise program (HEP), versus manual therapy and a HEP, or a home exercise program alone [53]. The connection of manual therapy with pain neuroscience education has been presented eloquently in past works [54]. Manual therapy and key principles associated with pain neuroscience education are not mutually exclusive and can be used together to enhance overall outcomes.



► **Fig. 3** Many manual therapists are additionally trained in pain neuroscience education (PNE), whereby the MT training already includes at least parts of PNE. The therapists therefore do not lack communication skills or even empathy. (© Thieme Group/Susi Schaaf)

Demonization Six: Manual Therapy does not fit within Value-Based Care

By definition, value-based care is associated with health care services that directly link performance on cost, quality and the patient's experience of care [55] (*see: Value-based Care*). In a value-based healthcare economy, the cost-utility of interventions for spinal disorders may be used to determine an appropriate distribution of resources toward interventions with greater value [56]. It has been suggested that active interventions have higher levels of value in patients with musculoskeletal disorders [6]. However, this suggestion is made without an understanding of the role of the patient's experience of care. Patient experience is highly interactive with patient-reported outcomes [57] and is markedly modified by management nuances.

VALUE-BASED CARE

The provision of value-based care is best defined as care that includes [58]:

- patient-centeredness
- guideline-oriented, integrated strategies
- measurement of patient outcomes and experiences
- cost-effectiveness

SOMATOPERCEPTUAL TOUCH

Geri et al. describe the analgesic, affective and somatoperceptual aspects of touch in their article [59]. Somatoperceptual is composed of the ancient Greek word “σῶμα” (body) and the Latin “perceptio” (the totality of the processes of perception, the content of perception itself). The somatoperceptual aspects are:

- Improved, more integrated patient’s body perception [60].
- Promoting the reorganization of body mental representation, especially for the regions that are hidden from view, such as the spine [61][62].
- Orientation so that patients can better locate pain and tactile stimuli on the surface of the body [63].
- Orientation, so patients can better discriminate between safe and threatening stimuli, which can reduce anxiety and avoidance responses [64].
- Strengthening the feeling of “This is my body” and improving the feeling of “I am in control of my body” [65].

The role of human touch on a patient’s outcome is wholly misunderstood. Hands-on techniques are analgesic, affective and somatoperceptual [59] (► **Fig. 4**) (see: *Somatoperceptual touch*). The recognition of the therapeutic value of touch as one of the most qualifying professional acts of physiotherapists is needed and guarantees patients of its best evidence-based delivery [59].

Further, a gross implication that ALL passive therapies are not cost-effective and are low value is a sweeping generalization. In fact, a recent study that investigated the cost-effectiveness of interventions for knee pain found that TENS, a passive modality, was the most cost-effective intervention [66].

Demonization Seven: Manual Therapy Causes as Much Harm as Help

By definition, harms include adverse reactions (e. g., side effects of treatments), and other undesirable consequences of health care products and services. Harms can be classified as “none”, minor, moderate, serious and severe [67]. Most interventions have some harms, typically minor, which are defined as a non-life-threatening, temporary harm that may or may not require efforts to assess for a change in a patient’s condition such as monitoring [67].

There are harms associated with a manual therapy intervention, but they are generally benign (minor). Up to 20–40% of individuals will report adverse events after the application of manual therapy. The most common adverse events were soreness in muscles, increased pain,



► **Fig. 4** In their article, Geri et al. describe the analgesic, affective, and somatoperceptual aspects of touch, **analgesic**: e. g., pain modulation by A β -fibers in A δ and C pathways, release of neurotransmitters, **affective**: e. g., activation of endogenous opioids, oxytocin, dopaminergic pathways, deactivation of stress responses, **somatoperceptual**: e. g., enhancement of body awareness, reorganization of mental representations of the body, discrimination between safe and threatening stimuli, sense of “This is my body,” and “I am in control of my body.” [59] (© Thieme Group/Susi Schaaf)

stiffness and tiredness [68]. There are rare occasions of several harms associated with manual therapy and these include spinal or neurological problems as well as cervical arterial strokes [9]. It is critical to emphasize how rare these events are; serious adverse event incidence estimates ranged from 1 per 2 million manipulations to 13 per 10,000 patients [69].

Demonization Eight: We Can’t Identify Candidates for Manual Therapy, which Means the Techniques are Unnecessary

It is assumed that if we can’t identify unique candidates for a specific intervention then that intervention is not necessary. This is an error in extrapolation. To date, identifying appropriate and definitive candidates for treatments such as surgery, injections, medications, specific exercise, dry needling, or cognitive behavioral therapy has not occurred. Yet, except for medications, these interventions are frequently less scrutinized than manual therapy.

The reason we can’t identify specific candidates for our treatment choices is related to the theory of the shared

mechanism. With shared mechanisms, regardless of what approach you use, there seem to be shared responses in which everybody responds quite similarly; the outcomes are essentially the same no matter which treatment was applied. Shared mechanisms are the reasons we frequently see null trials when interventions are evaluated. This was first robustly reported on in the psychology literature [70]. Shared mechanisms suggest there is no superior intervention. A “dirty” secret that we need to recognize as clinicians is that the majority of our musculoskeletal approaches yield similar outcomes [71].

Rational Use of Manual Therapy

At present, there are no “silver bullets” in the management of patients with musculoskeletal injuries or pain. Manual therapy is also not a silver bullet; when used correctly, it may be an effective option for pain modulation. Manual therapy may be effective for use with patients who are pain adaptive, and who do not have notable harmful cognitions, centrally mediated pain, or other behavioral considerations that may be best managed differently. Further, long-term use of manual therapy is an example of mismanagement of resources. At best, early pain modulation consisting of 2 to 4 visits is all that most individuals would need to progress to treatment that is more active.

The use of manual therapy should have the same philosophical consideration as the use of analgesics. Analgesics provide short-term pain relief that allows one to progress forward to daily activities or exercise. Manual therapy may do the same and will not likely be beneficial in isolation. At best, it is part of a multi-modal approach to care, is more effective when patient expectations are high, and when patient experience is a consideration.

Conclusion

Manual therapy has been inappropriately demonized over the last decade and has been associated with inaccurate assumptions and false speculations that many clinicians have acquired over the last decade. This paper critically analyzed eight of the most common assumptions that have belabored manual therapy and identified notable errors in seven of the eight. It is my hope that the physiotherapy community will carefully re-evaluate its stance on manual therapy and consider a more evidence-based approach for the betterment of our patients.

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