A Healthy Neck Should Disappear: a Phenomenological Anatomy of 'Body-With-Neck-in-the-World' to Inform Clinical Research and Practice

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Abstract

Neck pain continues to impose a large global burden, and syntheses of treatment evidence indicate generally small effects of many treatment strategies. While the neck is biomechanically complex, we suggest that one reason for limited effects of neck pain treatment stems partly from undertheorized understanding of what it is to be a body-with-neck-in-the-world.

In this article, we draw on embodiment theorists, notably Merleau-Ponty and Leder, to conduct a phenomenological anatomy of "body-with-neck" with the intention of introducing otherwise ways of thinking about the neck— not only as a collection of tissues and structures but as a part of the body *gestalt*.

We consider the neck as a site of 'potentiality,' for both achievement and vulnerability, and attempt to contextualize the neck as a primary driver of lifeworld perception.

We finish with recommendations for how clinicians and researchers can adopt alternative conceptualizations of what the neck is, what it is meant to do, and how different strategies for creating knowledge about neck treatment may lead to innovations in evaluation and management of neck pain.

Introduction

The neck, skeletally delimited as the region comprising the 7 cervical vertebrae, is a critical structure for human survival. More than a stack of bones, the neck collectively contains and protects several structures necessary for life and is the primary conduit through which oxygen and nutrients enter (and leave) the body. As the bridge between the cranial structures and the

rest of the body, the nuances of neck motion and stability have been subject to centuries worth of anatomical dissection and biomechanical exploration (e.g.,[1]). Second only to low back pain amongst musculoskeletal conditions, neck pain represents the 6th highest burden of years lived with disability globally.[2]

Identifying specific tissue pathologies that can explain neck pain has been a focus of medical inquiry for years. In 1886 Oppenheim[3] debated the nature of 'railway spine' (a 19th-century precursor to whiplash) as a disorder of tissue damage, against Page[4] who at the time argued that the symptoms of neck pain experienced by some people after rail travel incidents were more aligned with emotional trauma. Since that time several quantitative studies have found support for some tissue lesions; for example, clinical trials indicate that about 40% of people with chronic neck pain arising from whiplash-associated disorder (WAD) show signs of facet dysfunction.[5,6] Similarly, there is a growing body of evidence supporting strong and consistent associations between neck pain and emotions such as fear or depression.[7,8] Yet, with few notable exceptions syntheses of empirical evidence on interventions for 'non-specific' or musculoskeletal neck pain have generally reported effects that are small or of questionable clinical significance regardless of the treatment investigated.[9–11] Such findings raise important questions about the very nature of neck pain and what it is that intervention is meant to achieve, and why, despite decades of research, the relative global burden of the condition continues to rise.[12]

A sound point of departure is to consider the ways that knowledge about the neck, neck pain, its evaluation, and its management, have been created. The emergence of post-positivism as the valorized epistemology in Western medicine has largely informed the way the neck is understood and studied. What is currently known about the neck and neck pain is overwhelmingly the result of quantitation of human anatomy and experience. In the field of rehabilitation, patient reported outcome measures (PROMs) have become the standard metric of clinical research, intended to quantify the experience of neck health as perceived by the person being queried.[13] One way to conceptualize PROMs is as tools comprising a set of standardized questions that implicitly define the boundaries of 'healthiness' with clearly- defined rating scales. Similarly, many approaches to clinical or observational evaluation of the neck involve the observer (e.g., researcher) comparing elements of neck function, such as range of motion or strength, against evidence-based or tacitly- understood norms. Such tools are intended to translate complex lived experiences of neck health (or lack thereof) into a universal language of numbers, thereby allowing exploration through inferential statistics.

Throughout this article we will use the term 'dysfunction' for ease of presentation and as a term familiar to those in the field. However, we acknowledge that the concept of dysfunction has itself been under-theorized through much of the extant literature, as have the thresholds between acceptable function and unacceptable dysfunction. For our purposes, dysfunction will refer to any deviation from the inherent, unconsidered state of effortless existence that each person uniquely perceives as a healthy 'body-with-neck-in-the-world.' Dysfunction therefore can refer to any neck-related experiences that disrupt the seamless integration of the body, including any or all of the following: pain, sensitivity, restricted mobility, and discoordination, among others.

Whilst the natural sciences have revealed a wealth of information about what can be measured and known

about the neck from a physical perspective (e.g., findings based upon the shapes and slopes of articulating surfaces and surrounding musculature) and how the neck *moves,* missing is a critical exploration of how the neck is *experienced.* As an anatomically-defined regional target of treatment by providers of rehabilitation such as physiotherapy, chiropractic, massage, acupuncture, and medicine, we propose that a critical interrogation of 'body-with-neck-in-the-world' can help to move research and practice toward innovation and otherwise ways of understanding.

In this article, we probe taken-for-granted assumptions of the neck through a critical social science lens. We are motivated in part by our own history as providers of clinical physiotherapy services, as academics in the field of neck pain and clinical measurement, and at times as people who live in bodies with painful necks. We are further motivated by the theorizing of Nicholls and Gibson[14] who have previously undertaken a sociocultural meditation on the body in the context of physiotherapy practice, considering it not as an anatomical collection of tissues but rather endorsing a lens through which the body is understood as a fully embodied and culturally-situated site of perception, cultural capital, and political action. We will attempt to both contract and extend their thesis by first narrowing the focus to a specific region of the body, thereby creating space to explore it in considerable depth.

We start by questioning common clinical assumptions about what the neck is, what it is meant to do, and how neck dysfunction is routinely conceptualized, measured, and treated. From there, we move to a 'phenomenological anatomy' of the neck as site of perceptual experience, drawing upon works from theorists like Leder[15] and Merleau-Ponty.[16] We finish by considering alternative strategies for exploring and creating knowledge about the neck, particularly about the way dysfunction of the neck has been assessed, treated, and deemed recovered in traditional rehabilitation practice.

POSITIONALITY OF THE AUTHORS

Prior to embarking, it is helpful to position ourselves and make clear our positionality. The authorship team comprises a full-time tenured academic (DW) with prior clinical experience who is routinely included in lists of leading global scholars in neck pain research[17,18] and two PhD-trained clinician-scientists (PP, MK) with expertise in management of neck pain and related disorders. The ideas put forth in this manuscript are the results of over 60 combined years of experience in the field, driven largely by the lead author's knowledge of the evidentiary base for neck pain intervention and several years of reflection on research in the field. All authors have interest or expertise in the valorization of pain and disability PROMs as the primary, and often sole, indicator of whether an intervention 'works,' with particular interest in those used in the conservative rehabilitation space (e.g., physical therapy, chiropractic). All authors have been educated in alignment with the traditions of evidence-based practice in musculoskeletal (MSK) rehabilitation, including use of quantitative outcomes, manual therapies, and exercise through knowledge based on post-positivist epistemologies. Each have approached the ideas presented herein through different paths but with a similar tacit sense that perhaps the way evidence in the field has been constructed, generated, interpreted, and applied would benefit from engagement with critical theory about the body-with-neck-in-the-world.

A Sociohistorial View of Neck Pain and Dysfunction

THE NECK AS A MECHANICAL CONSTRUCT

As a collective of moving parts, the neck is a mechanical marvel. Seminal thinkers in anatomy and biomechanics like Panjabi[19], Taylor and Twomey[20], and Bogduk[1] have previously provided detailed information on the structures and mechanical function of the neck, making the invisible visible through cadaveric or imaging studies and thereby enabling the types of assessments and interventions available to many clinicians. It is widely accepted, for example, that a typical neck includes 7 cervical vertebrae that articulate through 6 intervertebral discs, 8 pairs of zygapophyseal joints, and 7 pairs of uncovertebral joints. Together those move in unison through coordinated contractions of deep, intermediate, and superficial muscle layers across very precise axes of rotation to result in multiplanar movement in three-dimensional space. Functionally, the multiple articulations that comprise the neck can be conceptualized as a single joint in that it is impossible to exercise volitional control of, say, only the 3rd on the 4th cervical vertebra. So deep is current knowledge of neck biomechanics and control that it is possible to elicit very precise and predictable movements of the neck through electrical stimulation of specific muscles.[21]

The bones of the neck further support and protect structures of critical importance to sustaining life, including axons of the most caudal cranial nerves, cervical levels of the spinal cord, the vertebrobasilar and carotid arteries, and superior cervical ganglia of the autonomic nervous system. The neck includes the pharynx that bifurcates into the esophagus as the primary conduit for delivering nutrition into the body, and the trachea for exchange of lung gases. Yet the neck is also highly mobile. That it permits movement through all planes while protecting the viability and function of some of the most critically- important structures for human life without requiring conscious control renders the neck a site of particular intrigue.

In an orthodox physical rehabilitation context, neck (dys)function is commonly determined by an external examiner (clinician) who observes and compares the neck as it moves through the 3 cardinal planes of motion: horizontal (rotation), sagittal (flexion/extension), and frontal (sidebend). The strength of the neck muscles may be graded against a practical understanding of what is 'normal' for a person of similar age and sex. Some disciplines, notably physiotherapy, chiropractic, and osteopathic practice, will employ passive manual evaluation techniques in which external pressures are applied by the examiner's hand to individual cervical levels that can not otherwise move independently, and then through those same hands sense the pliability of tissues and quantity of movement available against a tacit knowledge of what is typical. Per Leder,[15] the clinician performing such an assessment is a 'hermeneut,' using touch, sight, or sound to "*read the 'text' of the body for what it has to say about the corporeal depths.*"[15,p51]

Our intention is not to trivialize these evaluation competencies nor their resulting interventions. Indeed, there is evidence that, for example, the use of manual therapies for people with chronic neck pain are associated with improvements in scores on standardized PROMs and other indicators of neck health such as sensitivity to pressure or head-body coordination.[22–24] Such evidence indicates that uncoordinated or suboptimal function of specific parts

of neck anatomy may well be a precursor to the experience of dysfunction, although importantly, this statement requires a presupposed acceptance that PROMs and coordination measures are important indicators of neck health.

Yet for any nuanced ability to 'evaluate' the function of the various parts of the neck, we consider that by reducing focus to the finer details there may be a risk that we lose what Merleau-Ponty would consider the *gestalt* of what it means to be a body (including a neck) in the world. Per Merleau-Ponty, the body gestalt refers to perceiving or experiencing the body not as a collection of parts upon which to impose empirical reduction, but as a single meaningful whole with pre-reflexive meaning.[16] While we acknowledge that specific manual pressures applied to the right person at the right time can positively affect some standardized metrics of neck function, this seems to be an incomplete picture of what it is to 'be' a body-with-neck-in-the-world.

Interrogating Practices of Neck Rehabilitation Toward Recovery

We turn now to a critical reflection on the common practices of physical rehabilitation providers when engaging with the person with neck pain. The intention here is not critique for the sake of critique; rather, by 'troubling the waters' of taken-for-granted practices we will attempt to create space for reflecting upon dominant practices and be open to alternatives that may emerge from the turbulence.

EVALUATING NECK HEALTHINESS

As the primary, often implicitly- accepted discourse for determining whether an intervention 'works,' we consider how 'healthiness' of the neck region is typically evaluated. Clinical measurements, including those described in the prior section, attempt to quantify often unquantifiable and unobservable experiences, including such phenomena as pain and function. As latent constructs these are invisible to objective perception by either the experiencer or a third-person observer, meaning they require sound theorizing of what is being measured if clinical scales and tests are to be interpretable. Herein we find an epistemic void, in that nowhere are we able to find a prior theorizing of the neck beyond what Foucault[25] has referred to as '*anatomo-clinical*' projects *about* the neck, as an object of a researcher's study, rather than *of* the neck as an irreducible part of Merleau-Ponty's gestalt. Diagnostic imaging may reveal information about the structures of the neck, but does not reveal what it means to 'be' a body-with-neck-in-the-world. We might question what it is that a fulsomely- and accurately- mobile or strong neck enables in terms of one's experience of being in-the-world. For example, what elements of safety, presence, connection, or perception are impaired when the sensory apparati of the head cannot be easily oriented toward life-world objects?

Patient-reported outcome measures (PROMs) have become recognized as necessary pillars of patient-centered care[13] and are increasingly the basis upon which diagnosis, prognosis, and treatment decisions are made. They are intended to quantify respondent experience insofar as they are completed by the person seeking care rather than the care provider. As tools used to screen for dysfunction, predict a future health state, or evaluate effectiveness of intervention, PROMs

offer a ready platform from which to interrogate clinical practice of assessment.

To make this relevant to the neck, we consider the Neck Disability Index (NDI), by all accounts the most popular PROM globally for assessing neck-specific 'functional status.'[26] It comprises 10 items each proposed as indicators of some hidden truth about the actual health status of the neck. To complete it, the person with neck pain selects the phrase most reflective of their recent experiences during pursuits such as driving, lifting, and reading. To borrow another concept from Merleau-Ponty,[16] the items on a PROM most often reflect the '*I-can*' aspect of what it is to be a body-with-neck-in-the-world; I *can* drive, I *can* lift, etc…. This conceptualization of PROM items presupposes that a neck in dysfunction will manifest as '*I-cannot,*' or difficulties performing these specific tasks. Per classical measurement theory, the items populating such a scale are drawn from a theoretically- infinite number of possible indicators of the latent construct of 'neck function,' the patient's response to each giving a clue as to where they lie upon some invisible continuum of healthiness. This continuum can be conceptualized as ranging from "completely disabled" to something conceptually opposite of that—"completely abled" perhaps. These appear to be based on what is widely accepted as 'normal' ability for a healthy neck.

However, despite its ubiquity, a brief review of the development of this scale[27] reveals a lack of sound theoretical framing for what is being defined as neck function. By providing short phrases related to "normal" functions such as driving, lifting, or reading, there is a taken-for-granted assumption that these are universally desirable and that a dysfunctional neck necessarily interferes with these activities while a healthy neck necessarily enables them. The implication, therefore, is that those who indicate difficulty with any of these activities cannot be a body with a "healthy" neck. This aligns with what prior scholars[28,29] have alluded to as ableist or objectifying undercurrents in much of what are referred to as 'patient-centered' clinical measurement tools and, we propose, fails to account for the vast, pre-reflective potentiality of a body-with-neck-in-the-world.

To take this relevant example further, the NDI includes a question regarding difficulty driving. Presumably very few people desire the ability to drive simply to depress pedals, sit in traffic, or produce exhaust. Rather, driving in this context may represent an '*I-should*' to some people ("I should be able to drive my car"; "I should be able to get to work"). From a social capital perspective, the ability to drive their expensive car may position some at a higher social standing over those who own a less impressive car (or none at all). For others, environmental conscientiousness may position them as objectors to the very notion of driving, while some cultures may not valorize independent driving as much as do Western societies. Which is to say, without further context, such taken-for-granted assumptions risk broadly missing the experience of body-with-neck-in-the-world. Here we also encounter an important challenge to health- scale interpretation and causal assumptions more broadly; while a freely mobile neck may contribute to the experience of safe or comfortable driving, the perceived ability to drive a car does not *assume* a healthy neck any more than the inability to drive assumes an unhealthy neck. We propose that this is one reason that relying solely on this kind of PROM as the primary indicator of 'recovery' from neck dysfunction, as the majority of evidence for neck pain has been based, may be problematic.

We note that clinical assessment of a (dys)functional neck rarely, if ever, considers it as a broader and non-reducible component of embodied existence. That is, the clinician rarely considers ways that the status of the neck may interfere with, or change, the perceptions of the sufferer's lifeworld and their experiences within it. Issues of aesthetics, vulnerability, ecstasy, perception, or interpersonal connectedness seem to be rarely explored and even more rarely are the target of intervention by rehabilitation providers. Per Gibson (2016):

> *"We can continue to measure function, symptoms, activities of daily life, affective states, and all the other "domains" of interest. But we must cease to assume a direct relationship between these phenomena and the goodness of a life."*[30, (p. 69)]

We propose that casting a phenomenological lens on neck health enables evaluative practices that center personally- meaningful experience through considering not only how the neck functions biomechanically, but also how it contributes to the overall *gestalt* of being-in-the-world. Clinical interactions may then take the form of inquiring about the person's experiences of engagement with their world— moving beyond their ability to work or physically conduct daily activities. The clinician could query whether the patient has experienced: changes in their perceptions of or connections with the world and people around them; feelings that their social standing has been affected by their neck dysfunction; or any increased sense of vulnerability to harm (including physical, social, political, or financial harms). These represent just some examples of an expanded interpretation of neck function and how an exploration of phenomenological anatomy can complement that of biostructure in clinical rehabilitation practice.

TREATMENT FOR NECK DYSFUNCTION AND DETERMINATION OF EFFECTIVENESS

When asked to reflect about their treatment goals, most health professionals would likely endorse 'recovery' as a key outcome of effective care. However, both empirical and anecdotal evidence indicate that when pressed for how the concept of 'recovery' is understood, opinions and beliefs vary widely.[31–33] Some may proffer concrete targets such as 'return to work' or 'full range of motion'; others will attempt to align recovery with other nebulous concepts like 'function,' 'mobility,' or 'quality of life.' Still others will opine that recovery is whatever the patient says it is— an admirably patient-centric view of practice yet one that eludes standardized metrics and thereby seems, on the surface, misaligned with what is widely accepted as 'evidence-based practice.'

Yet despite even these conceptualizations of recovery, and based on our own experiences as clinicians, much of the rehabilitation project of *treatment* is driven by an almost hyper-thematization of the dysfunctional body, or body part(s), that are the target of the practitioner's focus. For example, patients are encouraged to become aware of their neck throughout the day, set reminders or timers to perform very specific exercises, and adopt mindful movement such that exercises are performed correctly. Patients may be instructed to palpate the muscles of their neck, feel subtle movements of the joints, adopt 'good' postural alignment, apply creams or thermal agents, or massage the tissues, all forefronting the neck into conscious embodied awareness.

The history of physical rehabilitation indicates that there is indeed value to be gained from this type of reflective thematizing as an initial step toward gaining

some mastery over the dysfunctional body.[34,35] Yet, per Merleau-Ponty,[16] Leder,[15] and other embodiment scholars, this cannot be the end to which rehabilitation strives. At some point the body region must again disappear from awareness, moving from a reflective to a pre-reflective part of the body gestalt. Through our experiences in both clinical practice and training programs, rarely is recovery defined as 'the problematic region of the body is forgotten.'

Toward a Phenomenological Anatomy of Body-With-Neck-In-The-World

We turn now to considering otherwise ways of thinking about body-with-neck-in-the-world. We acknowledge the work of prior scholars who have undertaken the project of thematizing health and function from a first-person rather than third-person perspective,[36,37] many doing so through phenomenological inquiry to "*understand and describe lived experiences.*"[38(p 97)] For example, the works of Heidegger[39] and Merleau-Ponty[16] provide ways of thinking about the phenomenological aspects of being-in-the-world, and position the body not as passive object but as active subject that co-constructs the meaning of "world" and "health" through complex, often irreducible interplays between perception, consciousness, environment, potentiality, and intersubjectivity.

Merleau-Ponty theorized that the body is the primary way through which a person experiences and understands the world, and the world is the primary way through which a person understands themselves.[16] Accordingly, he suggested that as *embodied beings*, bodies, minds, and the world are inseparable.

Relevant to our thesis, the actional fields of most primary sense organs (e.g., ears, nose, and mouth) are fixed in position on the head, meaning that any attempt to redirect those sense organs to a perceptual lifeworld requires an accurately mobile neck. The ability to rotate lends the eyes a larger perceptual field, but here again the mobility of the neck and its reflex-mediated connections with the eye muscles permit a much wider field of perception. As Leder reminds us, the face "*serves as an originary locus of communication and perception,*"[15 (p 29)] and as the orientation of the face is dependent on the neck, it is difficult to discuss perception without discussing the neck. This permits us to consider Merleau-Ponty's principles of *intentionality*— that to which consciousness is directed, and *potentiality*— the tacit 'I can' or the pre-reflectively- known collection of available movements and functions that allows intention to be enacted when needed.

THE NECK AS AN ASPECT OF INTENDED COMMUNICATION

As an analogy to frame the first part of this discussion, consider for example two strangers sitting with friends across a crowded nightclub, who suddenly make eye contact with a romantic spark. In this example, the neck participates as both subject and object of perception. While it would be inaccurate to suggest the neck itself does the perceiving, more important is the role of the neck in directing the primary sense organs of the head toward important stimuli. Having caught each others' attention, the neck remains in play as part of a broader *embodied intention*, enabling interpersonal connection but still not a central focus of conscious awareness. A thick muscular neck or long slender neck

can tacitly signal health and vitality. The flirtatious tilt of the head, the quick and playful turning away when eyes meet, throwing the head back in laughter, all are made possible by a well-functioning body-with-neck—although importantly for a discussion on dysfunction to come, none require conscious reflection. As the night wears on and our new couple gets closer, the sensuality of the neck as an erogenous zone may be forefronted, as might the neck as site of thermal regulation when the two venture into the cold night.

This simple example allows us to thematize the neck as a driver of perception and how it is both foregrounded and backgrounded in interpersonal communication, physiological regulation, social capital, and physical intimacy. Yet this is an incomplete view of the embodied potentiality of the neck. As a site that facilitates safety and security, a well-functioning neck permits the ability to embed oneself within interpersonal dynamics or to cope with unexpected adversity. We can see the ways a healthy neck is culturally grounded through common English colloquialisms that appear to belie tacitly-held understandings of the role of the neck in perception, emotion, and safety. For example, soldiers in the field of war may be instructed to 'keep your head down' or 'keep your head on a swivel' (constantly scanning one's surroundings for signs of threat). After a bad loss, a coach may encourage his team to 'keep your head up' to exhibit pride. Those overwhelmed with responsibility may be 'buried up to the neck' in work. Even a cursory scroll through one's Instagram feed will no doubt reveal self-portraits of people looking upward at their camera in an effort to stretch and smooth the skin of the chin and neck for the perfect 'selfie,' offering a glimpse into the assumption in many cultures that a neck with tight smooth skin represents vitality, youth, and fitness. A neck that can move rapidly and freely allows quick, often unconscious movement to avoid or absorb and dissipate impact from a fall or fist. Looking outside of stereotypically Western examples, we can see ways the neck can provide social capital in other cultural contexts, such as for the long-necked ring-wearing women of Myanmar's Kayan tribe, the common African and Indian practice of supporting and balancing baskets atop the head during transport, and the neck skin as part of the body canvas for the Tā moko tattoos of the New Zealand Māori, as examples.

THE NECK AS A VULNERABLE POINT OF POTENTIAL VIOLENCE

Importantly, the neck also represents a site of vulnerability and potential violence. As the location at which the esophagus and trachea bifurcate, the neck is the most likely site of aspiration and choking. The neck is widely accepted as the central site of vulnerability and dysfunction in whiplash-associated disorder, a condition so named due to the mechanism of rapid energy transfer between the thorax and head through the neck.[40] It is a site upon which others can enact their own power for purposes of harm or oppression. Drawing one's finger across the front of the neck while gazing at an opponent, mimicking a knife cut, is an almost universal sign of threat that is effective due to the tacit knowledge that the front of the neck is highly vulnerable to catastrophic harm. Suspending the body by the neck is the leading method of suicide in Canada.[41,42] Strangulation represents one of the most common forms of physical harm in intimate partner violence.[43] The neck is immediately and unambiguously thematized in the context of shackled prisoners or slaves, in hangings or lynchings, and one wonders if the experience of a painful or dysfunctional neck holds a greater sense of threat in equity-denied and -deserving groups.

Background Disappearance for Foreground Dys-appearance

Having positioned the neck as sites of both bodily potentiality and vulnerability, we next draw upon the thesis of Leder[15] who extended the works of Merleau-Ponty. In states of relative health, Leder describes two types of bodily "dis-appearance": *focal*, wherein the body structure is the site of perception while not being consciously perceived (as in the eyes that do the seeing but are not themselves seen); and *background*, referring to all other parts of the body supporting the act of perception without being directly involved in it. Per Leder:

> *"While in one sense the body is the most abiding and inescapable presence in our lives, it is also essentially characterized by absence. That is, one's own body is rarely the thematic object of experience. When reading a book or lost in thought, my own bodily state may be the farthest thing from my awareness. I experientially dwell in a world of ideas, paying little heed to my physical sensations or posture."*[15(p1)]

Using this nomenclature and putting it within our context of potentiality and vulnerability, the neck functions less as a focal site of primary perception and more in the background to support and move the head and its primary sensory organs, allowing the eyes, ears, or nose to locate and fixate on a sight, sound, or smell. While the neck *can* be a site of perception, such as from the kiss of a loved one, the chill of a cool evening, or the attack of an assailant, per Leder a healthy neck should fade into background disappearance, as an enabling structure of the head and face that when functioning well is not a part of conscious embodied experience.

THE 'HIDDEN' NECK…

Uniquely, the neck is even hidden from our view. We cannot gaze directly upon our own neck without the use of a mirror, invoking Merleau-Ponty[44(p213)] who writes, "…*my body as given to me by sight is broken at the height of the shoulders and terminates in a tactile-muscular object.*" Perhaps if we were to practice we may be able to perceive the elements of our neck— the movement of air through the trachea, the pulsing of arteries, or the movement of thyroid cartilage when swallowing. Even here, these are awareness of motility rather than passive 'neck-in-space,' providing no sense of what our own neck looks like, thereby contributing to an incomplete knowledge of self.[45] We argue that, by virtue of being hidden from three-dimensional sight (assuming a mirror or photograph provides two-dimensional images only), by its background disappearance, and its relative lack of tactile acuity, nowhere on the surface of the body is this experience of corporeal alienation more relevant than the head and neck.

…THRUST INTO BODILY AWARENESS

However, when illness or dysfunction (e.g., pain) strike and we find ourselves unable to quickly, accurately, easily, or completely orient the head to the environment, we propose that this experience can be conceptualized as a real or pseudo- disconnection from a lifeworld that is now less accessible. Drawing from Leder,[15] the dysfunctional neck thrusts itself unnaturally into the center of bodily awareness while remaining outside of direct self-observation. Several prior scholars have explored the phenomenon in which pain or illness shrinks or distorts the experience of the perceptual world, as the body becomes acutely and all-consumingly foregrounded in consciousness[46–

[48] perhaps summarized most concisely by Scarry[49(p36)] who states "*the absence of pain is a presence of world, the presence of pain is the absence of world.*" Rather than residing in background disappearance (perceiving from the body out toward the world), pain or dysfunction severs parts of our ties with the world-as-known, thereby forcing the perceptual field to turn inward.

Here Leder introduces the alternative term '*dys-appearance*'— in that when in pain, a normally absent body region appears as a central object of perceptual awareness. When the neck has dys-appeared and forced itself into objective thematization, not only are we suddenly aware of what should be absent, but our tacit understanding of potentiality (abilities we have at the ready) is threatened. As a dysfunctional and dys-appearing body part becomes an object of the perceptual lifeworld, the experience is akin to a bodily "dys-unity."[15] Contrary to bodily tranquility or 'at-homeness,' dysfunction renders at least part of the body suddenly less capable, more vulnerable, perhaps painfully sensitive, or even disfigured, thereby distancing it from a usual or desirable state of security, intimacy, and connectedness. In this way Leder[15] suggests that awareness of the corporeal body is not normally a part of the self, and that by forcing conscious but undesirable awareness of the painful or dysfunctional region, the very notion of 'self' is threatened.

Alternative Ways of Conceptualizing Clinical Evaluation, Treatment Outcomes, and Research On Neck Pain

Here we return to the practices of rehabilitation professionals when engaging with a person with neck pain or dysfunction, considering how those may be informed by our brief phenomenological anatomy of the neck. To summarize, and despite the focus on a single body part, we have thematized the neck as a location irreducibly incorporated within the gestalt of the lived body. While not a primary organ of perception, we have positioned the neck as a region that primarily supports and enables perception, safety, connection, and social capital. In this way, we propose that the neck plays a critical role in our phenomenological experience of the lifeworld. We have argued with the support of prior scholars that when in optimal health, the neck is rarely the subject of conscious thematization but is "*alien-as-forgotten*"[15] with potential for non-reflective action when and as needed. The experience of an itchy shirt collar, or the warming touch of a cashmere scarf, may temporarily foreground the neck, but even here these experiences are secondary to a different goal, such as tranquility or comfort (the urge to scratch an itch or to feel warm when out in the cold). We argue that where the neck is most commonly and acutely thematized is under conditions of acute intense stimuli, like the kiss of an intimate partner, the life-threatening grip of an assailant, the distress of choking, or pain and stiffness experienced after a car collision. It is with this thematization that we engage in the following conceptualizations of assessment and intervention.

FOR CLINICAL EVALUATION AND OUTCOMES

We propose that the concepts of embodied potentiality could contribute to the foundations for a critical theory of neck pain evaluation. Expanding upon the current practice of clinicians asking patients specifically about their neck, having them respond to standardized questions about possible functions on a PROM, or observing neck function through standardized tests,

embodiment theory encourages consideration of how the ends to which rehabilitation strives could instead be viewed through the lenses of perception, embodied potential, and background disappearance.

The Neck and the Lived Experience. If these approaches were adopted, one would expect discourses for evaluation of dysfunction and recovery to center lived experiences of the body-in-the-world (e.g., concepts of perception, interpersonal connection, safety, and at-homeness) rather than the function of a single body part. From this context the clinician need not explore all aspects of the experience of 'body-with-neck-in-the-world' but rather explore the degree to which the neck occupies burdensome or unnatural conscious mindspace, or the ways that the sufferer's perceptions of their world have changed.

As a concrete example, the works explored herein would suggest that the ends to which rehabilitation providers strive can shift from "how is your neck today?" toward "how much have you thought about your neck today?"; "does your world seem any different since your last visit?"; or "what is preventing you from feeling at home in your own body?"

'Forgetting' as an Aspect of Healing. By centering absence of the neck as a key indicator of neck function, the goal to which clinicians can strive is not that the patient is doing their neck exercises properly and routinely or are more aware of their neck postures throughout the day, but rather that the hyper-specific neck exercises common to early rehabilitation eventually fade such that they are largely forgotten. In this context, one interpretation of a patient who admits to forgetting to do their rehabilitation exercises may signal a good outcome. Arguably, widely accepted PROMs like the NDI go part ways to accomplishing this in that not all items on that tool are phrased in specific relationship to the neck (e.g., "I can do as much work as I want"), although 7 of the 10 items on that measure do explicitly center '(neck) pain' as the experience that is or is not permitting those activities to be performed. Decoupling the activities in that scale from the explicit experience of neck pain may go part way to centering absence as a desirable outcome, but the continued assumption that all activities in a standardized scale are equal contributors to all respondents' sense of embeddedness within their lifeworld remains arguably problematic.

While standardized PROMs are likely to remain in use as an indicator of study effects, particularly owing to their firm entrenchment within current conceptualizations of quantitative rehabilitation research, the thesis presented here signals that alternatives exist. Some of these are described in the later section on research implications.

FOR TREATMENT

The anatomo-clinical projects of neck rehabilitation remain relevant despite the expanded considerations we have provided herein. If a freely and effortlessly mobile neck is part of the gestalt of a comfortable body-with-neck-in-the-world, then identifying and rectifying structural or mechanical impairments to function (e.g., restricted joints or uncoordinated muscles) fits both a traditional and this newer concept of neck health. However, if our thesis is accepted, we have opened the rehabilitation project to additional ways of thinking about 'neck healthiness' that should reveal paths to new intervention approaches, arguably ones that embrace the irreducible integration of what have been traditionally separated into biological, psychological, and social phenomena.

Considering security, connection, and perception. Some such interventions will continue

targeting dysfunction that is conceptualized as being located internal to the patient receiving treatment, although perhaps with expanded considerations: beyond range of motion and strength, we can consider other aspects of security, connection, and perception. These could include intervention strategies to improve quickness and accuracy (for absorbing a blow or aligning sensory apparati), stability (for holding gaze during motion or prolonged postures), or even the role of the head and neck for communicating emotion (to enjoy laughter and intimacy, or to convey sadness), each of which requires comfortable and non-reflective freedom of neck movement. While this may raise more questions than answers, we believe this type of thinking will lead to expanded concepts of neck "exercise" and what the rehabilitation project is intended to achieve.

FOR RESEARCH

One way of approaching research through a different lens is to move qualitative or critical social scholarship from the margins to the center in discourses on evidence for neck rehabilitation, perhaps as a supplement to the field's reliance on quantitative metrics or as a substitute. We note as possibilities the practice of mixed-methods research,[24] arts-based data collection,[50] or of "naturalized phenomenology" as described by Gallagher.[51] Gallagher and others, themselves invoking prior works of Merleau-Ponty, have considered how phenomenology and the natural sciences can function in harmony rather than contention through embracing and interrogating the lived experiences of both the researcher and the participant, and embracing the complex issues of power, agency, and representation in the context of 'knowing' the healthiness of another person.

In that context, the participant in research on neck pain can be expected to be both the *object* of measurement, providing responses to well-theorized and meaningful standardized PROMs, for example, and also a partnered *subject* of the research in that they maintain agency and even co-design studies as a means of adding necessary richness to the interpretation of numbers on a scale.

The Value of the Lived Experience in Research. As an example, researchers could authentically engage with people with lived experience of neck dysfunction in the creation of research questions and methodological design. Such co-designed research might prioritize lived experiences as data through focus groups or interviews, to understand the reasoning behind their selection of a '3' rather than a '4' on a scale of pain intensity, for example. Additionally, such designs could explore the experiences of partners and participants related to the process and the study design itself, including the methods employed for measuring their health state. Importantly, these are not new designs (for example, see references 52–54) although they have been slow to penetrate neck pain research. We also note the emergence of accessible large language models ('LLMs'), expected to allow participants to express their experiences of health or intervention in their preferred natural language and then be rapidly interpreted and, if necessary, assigned a rank of severity, content, or sentiment as an otherwise means of understanding experiences of health in a person with neck pain.

Conclusion

We have attempted to apply Merleau-Ponty's theories of embodied phenomenology and Leder's approach to "phenomenological anatomy" to the body-with-neck-in-the-world, with the intention of opening further

dialogue on what a 'neck' is meant to be in both health and dysfunction. We acknowledge a tension throughout, in that we have simultaneously attempted to move away from reducing the rehabilitation project to individual body segments, while forefronting an individual body segment. However, heeding calls for more critical theory in physical therapy,[55] we undertake this work as an alternative way of thinking about the projects to which rehabilitation strives. We acknowledge the departure from traditional thinking on these topics, but also endorse a view that by centering lived experience and concepts such as potentiality and bodily dis-appearance, physical rehabilitation evolves from arguably paternalistic decisions about the 'right' or 'normal' way to move or function toward a more emancipatory practice that enables full participation in a lifeworld for people with neck pain regardless of ability.

We further acknowledge that much of what we have endorsed signals a conceptual shift in the understanding of the neck that will require a community of supports and allies and a cultural shift in the rehabilitation community rather than individual practitioner work. We believe, however, that concepts like gestalt embodiment, potentiality, disappearance, lifeworld perception, and at-homeness represent potentially important contributions to a critical theory of clinical evaluation and measurement upon which further scholarship can build.

Importantly, none of this thesis should be interpreted as an indication that rehabilitation providers have been 'wrong' in their approach to resolving neck dysfunction. As a reminder, we ourselves are physiotherapists and clinical researchers. We further acknowledge that much of what we have described— the centering of patient narrative and experience over hard numbers— already occurs through interpersonal discourse and routine elements of clinical practice. We have further opined that through authentic partnership, patients can be subjects of practice and research and are better positioned to reflect upon things like their lived experiences of security, connection, or perception than are researchers who often lack the standardized tools for translating experience into numeric data. Accordingly, it is researchers— those charged with 'creating' the base of rehabilitation evidence— that may be most challenged through adoption of the ideas presented herein.

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