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CLOSE TO THE BONE

Diagnosis Is Discipline, Treatment Is Art

In Osteopathic Manual Practice, subsequent to obtaining a patient's health history and informed consent, we must perform a thorough assessment leading to an Osteopathic Structural Diagnosis (which is not an allopathic/medical diagnosis). The process of performing an assessment and applying the governing concepts and principles have been discussed previously in this journal (see issue 4, page 16, "Rule of 9"). Diligence and attentiveness are required in performing an assessment that leads to an Osteopathic Structural Diagnosis informed by asymmetry, restriction of motion, tenderness/ tissue texture changes, and sensorial changes. While the Osteopathic Structural Diagnosis is influenced by the abovementioned objective findings, restriction of motion and motion asymmetry have the most impact on diagnostic outcomes. Having a disciplined method to assess a patient actively for safety, and then passively once safe ranges of active motion have been identified through a predictable range of motion, will allow an Operator to identify motion restriction and then create a hierarchy of findings as per the Rule of 9. Only after an assessment has been performed and primary, secondary, and tertiary lesions have been identified may the Operator engage in treatment.

Once a thorough, disciplined assessment has been performed that has led to an Osteopathic Structural Diagnosis, an Operator may intelligently engage in treatment. The foundation of treatment consists of solid technical and tactical skills. At the core of rigorous technique is the ability of the Operator to control a patient and provide leverage to facilitate motion where needed. (More discussion of technique may be found in issue 6 of this journal, page 14, "The 7 Commandments"). Moreover, the fundamentals of solid tactical skills is the principle of "base up, center out" and the capacity

to subsection anatomy based on neurovascular systems. Are strong technical and tactical skills enough to perform effective treatment? Not necessarily. Nothing is absolute. One ingredient is missing: the attentiveness to the tissues of the patient. The tissues of the patient inform what will work. The tissues of the patient will dictate whether a direct barrier treatment, an indirect barrier treatment, or a balanced treatment is most appropriate. The tissues of the patient will dictate whether or not an indirect barrier treatment is enough or if it needs to be followed by a direct barrier treatment. The response of the tissues will tell an Operator if the goal has been achieved when they go back to the disciplined process of assessment, or re-assessment in this case.

The use of the term "art" with respect to treatment revolves around the need to pay attention to the tissue response, the motion capacity, and the vitality of the patient. If we stick to strict technical models in treatment we will miss the connection with the patient—we will not identify what needs to be done. Good treatment is like a great jazz set: all the instruments work together to produce a beautiful piece of music by riffing off one another. There are great technicians in manual therapeutics who are able to straighten out crooked things; however, they will almost exclusively fail to achieve a longterm result or, said another way, stabilization of the lesion. The lesion will be forced out and the tissues will respond by returning to their original position. When we work with the patient, paying attention to their tissue response and allowing that to dictate the strength and direction of barrier engagement, we are able to provide an intervention that will stabilize. It is the artful application of treatment that the Operator must consider in order to be an effective practitioner.



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CERVICAL SPINE MOTION AND THE HYOID CONNECTION



By Lee Jarvis

The cervical spine has a tendency towards an anterior position. We tend to refer to this anterior position as a lordotic curve or general extension of the cervical spine. This extended position is primarily caused/maintained by the appropriately named extensor muscles on the posterior side of the spine. We could also implicate the thoracic curve, cranial weight, and gravity as contributing to cervical extension, but these additional influences are beyond the scope of this article. In the cervical region the extensor muscles are proportionately much larger than other muscles in the spine. For instance, though the latissimus dorsi and psoas muscles in the lumbar/pelvis region are generally larger than the trapezius or splenius muscles of the cervical/thoracic region, the bones of spine they cover are much larger than the cervical spine. The size of these cervical extensor muscles indicates the tendency in motion and resting position of the cervical spine.

The tendency toward an extended position of the cervical spine is so well known and understood that it is considered the default position; there is really no need to debate its occurrence. In many fields of manual therapy there is much training and effort put into determining the exact position of correction of this extended position of the cervical spine with much of the preparation based on the posterior muscles. This effort is completely warranted and often works well in preparing the cervical spine for an articular correction; however, the following article will analyze a group of contributing—though not obvious— muscles that support this extended cervical position. I find these anterior muscles are of significance to the Osteopathic Manual Therapy practitioner because they may prevent the cervical spine's correction if left untreated. The muscles we will explore in this article are those on the anterior side of the cervical spine.

The anterior musculature of the neck is largely considered to be for the purposes of jaw motion: speech, chewing, swallowing, and moving food bolus through the esophagus. Though all these previous statements accurately depict the purposes of the

hyoid and pharyngeal constrictor muscles, these same muscles are capable of contraction and therefore can have structural modifying effects on anything to which they attach. Through these muscles an anterior line of pull can be created from sternum to hyoid bone, then into the cranium.

Before commencing with an explanation of how these muscles affect the cervical spine and cranium position, I would first like to make clear that these muscles, even if they are contracting, are unlikely to directly cause immediate, major positional changes of the cervical spine and cranium. The anterior neck muscles to be outlined are all very short and thin as compared to the extensor muscles of the posterior neck or even the sternocleidomastoid and scalene muscles (muscles that also run somewhat in the anterior portion of the neck). However, should these small muscles become shortened chronically by the long-term position of the cervical spine and cranium, they may prevent the reduction of this position despite the strength of any antagonistic muscles.

The specific muscles we will outline are the infrahyoid muscles, suprahyoid muscles, and then the esophageal constrictor muscles. Illustrations will be used to explain both attachment points and associated mechanics of these muscles.

The infrahyoid muscles

There are four infrahyoid muscles. However, for this article's purposes we will mention only two: the sternothyroid and sternohyoid. These muscles originate on the posterior side of the manubrium of the sternum and attach to the thyroid cartilage and hyoid bone respectively. Together the sternohyoid and sternothyroid muscles represent a vertical line of pull when they contract. When swallowing, the sternothyroid and sternohyoid will create the downward pull necessary for hyoid depression that moves the epiglottis off the trachea.

The suprahyoid muscles

There are in total four muscles that make up the suprahyoid muscles. These muscles are the digastric (which is split into anterior and posterior parts), stylohyoid, geniohyoid, and mylohyoid. These muscles all have a shared origin at the hyoid bone (its horns and body) and will insert into the mandible, styloid process of the temporal bone, and mastoid process of the temporal bone. The specifics of what muscle attaches where are not drastically important to this article but the vertical line of pull on the skull created by them is. The suprahyoid muscles can very much be seen in the sagittal plane as a vertical continuation of the infrahyoid muscles. Based on their attachments, most firmly to the mandible, their contraction draws the mandible inferiorly and posteriorly. This inferior/posterior pull of the suprahyoid muscles does not directly create OA articular changes; however, with prolonged shortening, full range will be reduced.

The pharyngeal constrictors

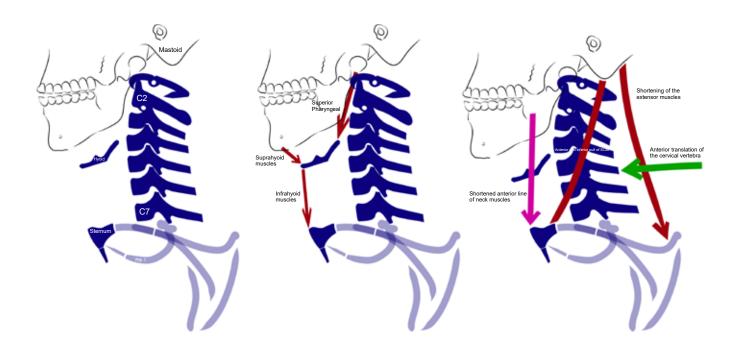
There are two layers to the pharyngeal muscles: the inner and the outer layer. The inner layer will not be covered in this article. The outer layer of pharyngeal muscles can then be divided into three more muscles: inferior, middle, and superior. These muscles share a function in compressing and directing a bolus of food to the esophagus and also to the

shared attachment points with the hyoid muscles.

The superior pharyngeal constrictor attaches to the occipital bone through the pharyngeal tubercle, the sphenoid bone through the medial pterygoid plate, and to the rest of the pharyngeal muscles via the pharyngeal raphe. The pharyngeal raphe is a distinct line on the posterior side of the constrictor muscles where the three outer pharyngeal muscles insert into/attach to one another. From the pharyngeal raphe the middle and inferior pharyngeal muscles extend and attach to the hyoid bone and thyroid/cricoid cartilages. These muscles, just as with the suprahyoid muscles, represent an oblique line extending off the hyoid. In this case the oblique line extends posteriorly and attaches into the neurocranium, its deepest attachment directly in front of the occipital condyles/OA joint.

To influence the position of the cervical spine, the two infrahyoid muscles we identified previously need only be shortened slightly. In fact, if the infrahyoid muscles were significantly shortened it would prevent proper release of the epiglottis off the trachea and prevent breathing. Once the sternothyroid and sternohyoid are shortened, this creates a maximum length the anterior neck tissues can reach—or as we at the CAO like to call it, a "shortened anterior line."

Together the hyoid muscles, hyoid bone, and pharyngeal constrictors create two oblique lines of tension that can be maintained to further fix the position of the cranium.



A shortened oblique line of pull generated on the sphenooccipital region through the pharyngeal constrictors could, with tissue fibrosis, contribute to or sustain flexion at the OA joint. When shortened as a unit through the suprahyoid muscles, they can help create or maintain OA flexion through drawing the mandible inferiorly and posteriorly.

Up until this point we've been talking about the anterior neck musculature by explaining, as we commonly do with muscles, the movements they create. However, as stated previously, in this scenario these muscles only assist in creating/maintaining a lesioned position because they lack the strength to cause problems entirely on their own. To explain this "lesioned position" we need to establish that the extended cervical spine shortens these anterior neck muscles.

The cervical spine has a unique characteristic that I have noticed and have had confirmed with other colleagues, that being anterior translation (also known as glide) on the horizontal plane. Extension of the cervical spine certainly is its natural tendency; however, the cervical vertebrae move into extension not just by rotation about a transverse axis but also by gliding anteriorly. I hope that the reader has had the opportunity to palpate a very extended cervical spine. I also hope you have noticed that at the apex of the cervical extension curve, the most extended vertebra feels as if it were absent on palpation of the spinous process. This is because the whole vertebra has essentially slid forward from the rest. To provide a differential: this anterior state of the spinous process is not due to fracture such as a spondylolisthesis. With gliding anterior, the entirety of the vertebra has moved forward and now is not easily discernible on the posterior aspect. The cervical spine in particular is capable of doing this because of the angle of articulation of the cervical facets. In the sagittal plane the facets are oriented 45 degrees and otherwise are a typical flat, smooth surface. As a cervical spine drives forward into extension the orientation and shape of the cervical facets allow for a slight anterior translation.

This capacity for translation seems minor (and it is only a small motion), but it has significant effects on the cervical spine and attached musculature. As the cervical spine and cranium translate forward and drift away from their inferior attachments they cannot become longer and therefore must be compressed slightly on the vertical axis. The neck musculature as a unit is put into a significantly shortened position. Given enough time these muscles undergo fibrosis and prevent the return of the cervical spine to a neutral position.

Written out in full, this dynamic of pull may seem complicated. Thankfully, though, this is actually a very simple chain of interconnected muscle and bone to test. You can test and experiment with this line of tissues easily on yourself by pressing gently into the origins (proximal tendons) of the infrahyoid muscles. If applied slowly and gently enough you will begin to feel a tug going through the hyoid muscles and into the OA region. It is wise to practice this on yourself

before applying the technique to a patient, as it can be a very uncomfortable experience if applied too forcefully. If performed aggressively, your patient will experience a distinct sensation of choking and the overwhelming urge to not rebook.

Treatment of this chain of tissues is equally easy to perform. Only a few simple areas need be worked on to generate a positive effect. Conversely, some need to be entirely avoided so as to not cause pain to the patient or irritate the tissues and worsen the lesion.

The esophageal constrictors cannot—nor should not—be touched directly. This is a very sensitive area largely controlled involuntarily. To get your fingers deep enough to palpate the esophageal constrictors would be far too uncomfortable for the patient. This is something you can test on yourself as well (though not recommended) by reaching along the medial side of the sternocleidomastoid (SCM) muscle and lateral side of the hyoid bone. Instead we can use the hyoid bone as a point of leverage to generate myofascial release on the constructors or in fact any of the hyoid muscles. By gently pulling the hyoid bone to the left or right, the opposite constrictor muscles will be lengthened for myofascial release.

An easy but (more importantly) safe and comfortable treatment method for the anterior neck muscles involves tracing the sternal attachments of the infrahyoid muscles. As in the example previously offered on how to self-test the muscles, if you work along the tendons of the infrahyoid muscles you will find that they release quite easily. Pressure inward and slightly downward puts the infrahyoid muscles on stretch without having to directly touch the length/belly of the muscle. It might be unwise to touch the mid to distal portions of the infrahyoid muscles because the thyroid gland sits directly underneath them.

The SCM muscle, based on its textbook definition, is a flexor of the cervical spine. Though the author does not disagree with this definition of the SCM function in isolation, when the cervical extensors on the posterior side are contracted the SCM will also work to create an anterior glide of the cervical spine. While you are working along the sternal angle for the infrahyoid muscles it is very appropriate to continue on to the origin of the SCM as well.

Another location worth analyzing is the inferior edge of the mandible. Along this line many of the suprahyoid muscles are inserted. In much the same way we work along the origin of the infrahyoid muscles, we can also push into and slightly upward to create myofascial release on the suprahyoid muscles.

Once this anterior neck musculature preparation has been completed to the operator's satisfaction, you should notice a marked difference in the ease in which articular changes can be made in the cervical spine.

COMMUNICATION BLOCKS



By Sam Jarman

In this article, an attempt will be made to articulate the trouble with words, the difficulty in locating the appropriate diction—so please forgive what follows. As a teacher of Osteopathic Manual Manipulation I have experienced many instances where a given word or description has engendered very different impressions within a group of students. Some groups are more comfortable with the term "medial rotation" while others prefer "internal rotation." I encounter students with previous experience in the field, which leads them to prefer the term "lateral flexion" while others are more familiar with the Osteopathic term of "side-bending." I have experienced the confusion that arises over Fryette regional flexion versus regional extension. I have had to navigate the term "rotation" as referring to motion in the transverse plane on the vertical axis while also having to explain that essentially all motion in the body is rotation because there is an axis involved. I have had to deal with the reality that anatomical books use varying terminology for the same thing and that, until 1998, anatomical nomenclature was guided by Nomina Anatomica and subsequently by Terminologia Anatomica. Indeed, the names may change but the structures remain the same.

Any given word exists nebulously within varying contexts of an individual group, and the same word can have a slightly different meaning and experience for each person. It seems to be commonly understood that communication is multilayered and heavily non-verbal, even in the presence of words. When considering non-verbal communication, there are many subdivisions that receive research attention. Some categories of non-verbal communication include body language/kinesics (i.e., facial expressions and gestures), proxemics (distance or the use of space as a communicative tool), paralanguage (the use of the voice through pitch/volume/intonation), and haptics (the use of touch to communicate). Bearing in mind that there are further subdivisions, it should be clear that words are not the only form of communication. As such, we must consider the other facets of communication to improve the capacity to articulate a thought or idea. Now, when working with a group, it is not possible to communicate perfectly with each individual. It is possible to have a broad communication style that does not push people away from the message being conveyed.

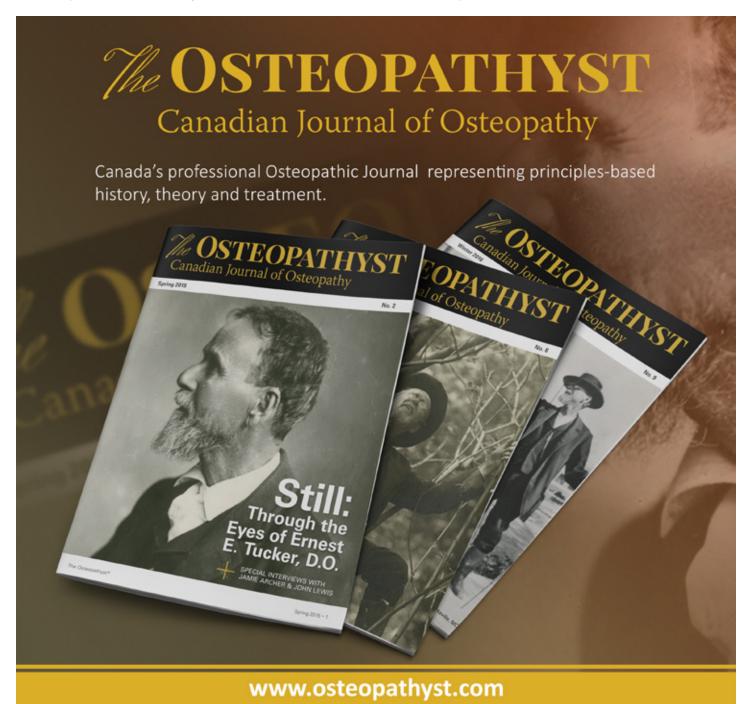
Facilitating broad communication requires learning while with the group. Attentiveness to the responses from the group will allow the communicator to understand whether he or she should use a different tone, smaller or larger gestures, less proximity, or a different form of contact. When demonstrating a skill to a group of students it is important that they know how to do it and why. To communicate the hows and whys it is important to display variegated methods, such as on a patient, on a bony model, with a diagram, or any other process needed. Patience and attentiveness are key and, when combined with a dynamic communication style, some understanding may be imparted to the group. Once the group has arrived at some understanding of the skill or tool, they must attempt to perform it.

When the group is attempting to perform (or recreate) the skill or tool, non-verbal communication truly matters. It is this point that individual communication is important. The opportunity here is to allow the student to experience the motions and palpatory feedback. It is at this juncture when words do more harm than good. The instructor has the chance to use positive body language, encouraging intonation, as well as guide the hands of the student to experience the skill or tool. The experience is far more powerful than any words. It is also at this point that an instructor will recognize that each student requires a different level of non-verbal communication learned through attentiveness.

The skill of communicating non-verbally is absolutely essential in Osteopathy or any other manual therapy. The communication is dictated by the ability of the practitioner to be attentive to the non-verbal cues the patient provides through tissue response. It seems to be the phenomena of needing to pay attention to the non-verbal cues from the patient's tissue response that leads to the requirement of tuning in to non-verbal communication to instruct the student in how to treat a patient. Instructors often attempt to use particular diction to communicate the experience of treating, yet the words sometimes distort the experience and impede full understanding of what needs to happen. There is a large amount of Osteopathic literature that uses experiential language as descriptors which, unfortunately, allow for inaccurate interpretations of what is actually going on. An example of

experiential language is to say that a region is "boggy," which leads to the inaccurate belief that edema is present; however, in most cases, it is simply an area with subcutaneous fat. If left merely with the description that an area is boggy, a student may assume a diagnosis without further exploration of the term. Experiential language is present in Osteopathic literature throughout the history of the profession, particularly when describing centers in the vertebral column that relate to dysfunction in other areas, a clinical observation in a local area that is more accurately described by the distribution of the autonomic nervous system. To circle back, older literature is presenting clinical observation, over time, of a patient population in a local area. Such characterizations do not, of course, represent all of humanity.

The preceding discussion has illustrated some issues with the language of Osteopathy such that instructors should aim to teach primarily through experience. Explain the concepts, skills, and tools with words as a baseline, followed by demonstration and then practice. It is during the practice phase that the instructor has the chance to direct the student to pay attention to the tissue responses. Treatment happens within the non-verbal communication that occurs between a patient's tissues and an Operator's input. The patient's tissue responses dictate everything. Because the patient's tissue responses dictate everything, the communication mode for teaching should focus on non-verbal methods, such as haptics, as it is already happening between the Operator, student, and patient.





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HOW DO I LEARN WHAT THIS DOES?



By Sam Jarman

When presented with a new skill or tool most people want to know: when is this thing useful/called for? It is a very reasonable question as the new skill or tool is something that the individual has not encountered or considered before. The aim of this article is to highlight a way (but not the only way) to learn what a new skill or tool does within the realm of Osteopathic Manual Therapy.

When an Osteopathic student or practitioner learns a new skill the simplest way for them to learn how to use it is to practice. In other words, apply the tool to as many different people as possible to learn how contexts vary. In learning how to apply the new skill or tool to a diverse group of people, the student or practitioner discovers that all methods require modification performed through real-time experience. A common consideration is that the details of a method are determined between the Operator and the patient based on each unique circumstance. It is the uniqueness of each patient and practitioner that drives the need to teach principles of technique and treatment instead of just rote technique and purporting that it is always applied exactly as shown/demonstrated.

Through practicing a new skill or tool on as many different people as possible, a student or practitioner will passively learn what the skill or tool does. Practice will reveal on which bodies/types the skill or tool has a positive effect, minimal effect, no effect, and negative effect. This process is the basis of learning what a skill or tool actually does across a broad spectrum of patients. The end point of this process often (but not exclusively) leads to a student or practitioner having the capacity to call on the skill or tool automatically when a patient presents with an issue that would be best suited for that skill or tool. This process relates to another common revelation: most questions about a given skill or tool are answered by practicing/using it more.

When practitioners are seasoned enough that they are able to call on a skill automatically, they become intuitive. The

term "intuitive" denotes that a specific issue presented in a specific area is unconsciously understood. In order to have a more complete understanding and command of a skill or tool, the practitioner needs to integrate the understanding of the skill or tool within the possible effects it will have in distant areas. In order to gain a greater contextual understanding, practitioners should add this step: assess any distant area, perform the skill or tool, and re-assess the distant area. A simple example would be assessing the cervical region, performing a long lever supine leg rotation, and re-assessing the cervical region. The underlying concept here is to relate the skill or tool to any or all other areas of the body.

To reiterate:

- 1. When a new skill or tool is learned, practice it on as many bodies as possible to learn how to use/perform the skill;
- 2. When practicing the new skill or tool, assess a distant area of the body, implement the tool, and re-assess the distant area to observe the impact (of course you will assess the local area on which the tool is applied and re-assess post-application).

With the above two points, the student or practitioner provides the learning and the context to make sense of the skill or tool. The challenge resides in the initial lack of understanding and context. When the skill or tool is introduced the student or practitioner wants to know when it will be effective. The answers to when the skill or tool will be useful are not clear as each individual is different. Due to these individual differences, it is more important to provide oneself with the framework for learning when the skill or tool should be the necessary interface. It must be stated that there are other ways to implement this concept; however, the most important part is that there is a clear and conscious process so that the learning is directed and progresses through experience.





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WHY I DON'T WANT TO BE CALLED "DOCTOR"



By Lee Jarvis

As a typical Canadian I would like to start by pre-apologizing should I offend anyone with the following article. I will preface this article by saying that it is not intended to be in any way an insult or a slight against the medical community. In fact, it is in support of this community. I have a great deal of respect for medical practice; the purpose of this article is to state that such respect is rigorously earned.

Occasionally in my office, patients will call me "doctor." I of course correct them when they use this title as, first, I am not a doctor and, second, it is illegal for me to use that title. The illegality of misrepresenting oneself as a doctor makes perfect sense to me because the title comes with the expectation that the advice and directions given by the owner of said title are to be taken as if lives depended on it. When I correct people, informing them I am not a doctor, they often explain that it is done as a sign of respect. This respect is much appreciated, but I am very aware that I have not completed the special type of training to earn the title of "doctor."

Before my current career as an Osteopathic Manual Therapist I worked as a nurse. This profession gave me unique insight into the medical world in much the same way someone who works in plumbing (an all-too-accurate metaphor) has an understanding of how buildings work. During shift breaks I would often talk to medical and surgical residents about the hours they worked. How many hours in a row a resident worked depended on the profession and seniority. It was common for surgical residents to work 15 hour days six or seven days a week. For medical residents it was very possible that they could work from 7:00 a.m. one day until 5:00 p.m. the next day. Yes, you read that correctly: that's a total of 34 hours straight, with maybe some time to sleep should it not be too busy (a rarity). They would then be expected to come in the next day at 7:00 a.m.

These long hours are not just limited to medical residents as it is quite common for senior surgeons to work a 24 shift. Again, there is potential for rest during this time; however, sleep will not always happen, nor is it for more than a few hours when it does.

To alleviate those who now fear for medical residents' physical health and sanity, there are of course stretches of days off between rotations. At the time, it was normal for residents to have 10 full days off between rotations. Realistically, though, there is still a great deal of studying in this time to keep up with a rapidly advancing medical system. This type of training seems mind-boggling, but understand it is for a very specific purpose. It is not necessarily that the medical system wants or expects these new doctors to comprehend every single thing about the medical system, or even remember every occurrence from shift to shift (no human could). Instead, the medical system wants the students-soon-to-be-doctors to demonstrate the character required of someone who saves lives. They need to react consistently, with only slight hesitation or error, when faced with problems where lives will be lost.

I recall a time when a nurse who was working the same nightshift floor was trying to get in contact with the doctor for an increase in pain medication. Typically, a doctor who you've paged will respond within a few minutes, so it was strange in this case that it was taking so long. When she did finally get in touch with the doctor he was very rushed as he explained (somewhat frustrated) that two of his patients were dying in the ER at that very moment. This was not a "they could maybe die" scenario; they were in the active process of dying, an outcome probable with or without medical attention.

I do not intend to scare anyone who hasn't been involved in the medical system with this type of information, but I do want to ensure that I've made clear the severity of the environment in which a doctor works. The majority of people cannot keep up with the academic component let alone the mental toll the title of M.D. requires.

I am a Canadian-trained Osteopathic Manual Therapist and feel that the training I went through was rigorous and of a very high quality. In my 4 years of training I stayed up late nights studying, rarely had a day off from studying or work, and sacrificed time with friends and family to make sure I met my goals. Nonetheless, I can safely say that I've never worked for 34 hours straight.

Currently in Canada and in many places around the world, non-allopathic medicine and healthcare practitioners are wanting to be called "doctor." I would never say these practitioners did not work hard and do not deserve respect; however, it always confuses me that anyone would want to take on the weight that that particular title comes with. It's important to understand that the title has built-in respect, but also an expectation to take charge in a terrifying, difficult situation, or to give advice that is to be regarded as worthy of following through on. This doesn't mean that doctors are infallible. Medical doctors are well trained but still definitely human, with many—and sometimes more—personal flaws than we all have.

I do believe that through my schooling and professional practice I have worked very hard and developed a very thorough knowledge of the human body. I believe I can say the same thing about those who graduated from the same school as myself, other schools, and other professions. That being said, the work we have done is not the same as the medical doctor. Perhaps over time it can be equal in stress level and commitment, but it is still an entirely different field. So why would we want to take the same name when our skill sets are very different?

From the origins of our profession, Andrew Taylor Still bestowed the title "D.O." This title first meant "Diplomat of Osteopathy," someone who represents the profession, not the current "Doctor of Osteopathy." To represent the profession well meant more to Dr. Still than the title. The osteopath was always to be different than, but equal to, the medical doctor.

In Canada we do not (or more accurately, cannot) call ourselves doctors. We are Osteopathic Manual Therapists. To be honest, not all that many people are familiar with the title. I believe that this lack of general public knowledge is, however, a benefit to us should we represent ourselves well.

At the time of their genesis, neither the title of doctor nor osteopath were widely recognized; they garnered about the same quantity of respect. However, through proving the effectiveness of their applied theories and skilled techniques, the early doctors and osteopaths gained the respect of the public. In this way each profession took a new title (without consciously meaning to do so), titles that are now recognized throughout the world.

If the principles that Osteopathic Manual Therapy is founded on are true, then they will be proven constantly and need nothing extra to dress them up. If our work benefits our patients in a clear and definite way, then our reputations will far precede us. If your work is fuelled by compassion and happens even in the absence of payment, then whatever title you hold, be it "lightning bone setter" or "mud," then that title will be trusted.

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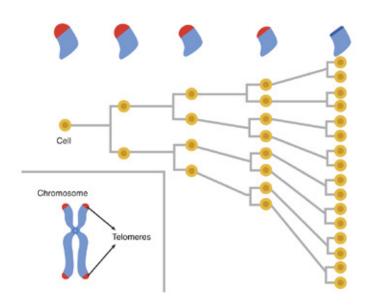
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THE HEALTH BANK ACCOUNT EXPLAINED BY THERMODYNAMICS



By MJ Renshaw

The notion of the 'health bank account' is an osteopathic concept that relies on many factors. It refers to the amount of energy the body has to self-heal and self-regulate. The main factor is the genes you are born with, giving you your 'account balance' and the depletion of this account is based on lifestyle, environment, socioeconomic factors, diet, etc. The end result of the maximum bank account withdrawals is death, or in terms of thermodynamics, disorder. The aim of this paper will be to explain the notion of the health bank account in terms of the laws of thermodynamics, specifically the first and second law.



Current research tells us that the main determining factor in aging and lifespan is DNA, which exemplifies the Hayflick Limit Theory. This phenomenon states that there is a normal number of human cell divisions until the process stops. We know that the average cell will divide between 50-70 times before cell death. This relates to DNA because each time the cell divides the telomeres on the end of the chromosomes get

smaller until they are no longer present. The deterioration of telomeres and its correlation with aging is a concept called cellular senescence and results in a change in 'cell state'.

What does this have to do with manual osteopathy? The basic principles of entropy help us to understand how the outside influences affect the human body more fatally for some than others. In order to understand entropy we have to explore the laws of thermodynamics. Since most of the laws pertain to heat transfer in a closed system it would be difficult to relate it to the human body entirely. Although we are made up of systems, they are not closed because they require each other to function; thus, we cannot consider the body a closed system since we require energy from outside (i.e., food) in order to function. The first two laws can help us understand the health bank account on a more fundamental level.

1st Law of Thermodynamics

Also known as the law of conservation of energy. Energy can neither be created nor destroyed. Energy can only be transferred or changed from one form to another.

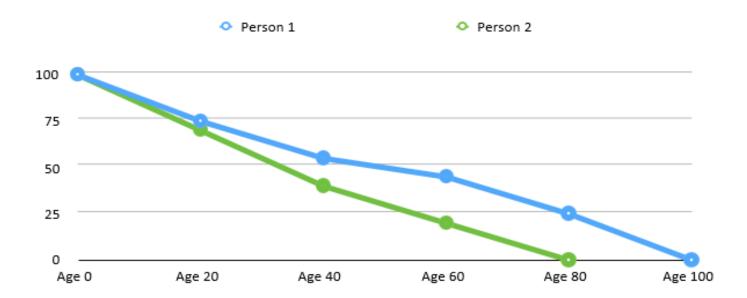
2nd Law of Thermodynamics

Entropy within any closed system always increases. A popular analogy for this is an ordinary room: if not cleaned it will invariably become messy with time regardless of how careful one is. When the room is cleaned its entropy decreases, but the effort to clean it has resulted in an increase in entropy outside the room that exceeded the entropy lost because all systems tend toward disorder.

Based on the room analogy we can better understand how the body's own self-healing and self-regulating systems can actually cause an increase in entropy toward disorder (or death). The more the body is required to use energy to repair itself, the more energy it takes away from the body's ability to

maintain itself. Therefore, if we took two people with the exact same genetic makeup and had them live relatively the same lives, then according to the law of thermodynamics and what we know so far of DNA, they would reach entropy at approximately the same age. If, however, one person lived an entirely different lifestyle and broke six bones in their body during their lifetime, that person would reach entropy sooner than the other. This is because the body's 'health bank account' is depleted quicker in order to use energy to heal the bones. In this scenario the bone healing process would be considered a room of a house and since the person needs to clean the room, the house becomes messier.

This is a chart showing the example of two people with exactly the same genetics living different durations based on their environmental factors. Person 1 is living a life with little to no extra bodily stress and Person 2 has broken several bones.



An osteopath would never measure the length of someone's telomeres in order to gauge the entropy of a body, but an osteopath does consider the vitality and constitution of a person in treatment. Since an osteopathic treatment does change the mechanics of the body, energy is redistributed from your body in the process. This is why a patient may feel soreness, have increased hunger and a lack of energy after a treatment. When treating a patient with low constitution (or a low health bank account), energy loss is taken into consideration to avoid putting that person in deficit. Not only is their body requiring a lot of energy to heal their lesions, but they require energy to perform their day-to-day functions.

An osteopath can use the second law of thermodynamics on both a macro scale and a micro scale. On the macro scale, if an elderly person comes into a clinic, an osteopath will probably administer a very gentle treatment to avoid taking too much from their health bank account. On a micro scale we can use thermodynamics when creating a running diagnostic in

certain regions of the body. If a certain system or area of the body is in lesion, it is going to require more energy from the rest of the body to function or promote reparation.

It is impossible in osteopathic treatment to consider creating a formula by which we could test someone's constitution or seek a health bank account balance seeing as the factors that would alter this formula would be infinite. Essentially, it would require us to have a complete understanding of someone's DNA and genealogy. It would also be redundant because we would need a new formula not only for each person, but also for each person in that moment of time. We can get a good sense of a person's constitution by their body's reaction to treatments both on and

off the table; this is enough to deliver a successful treatment. Since osteopathy assumes that the body is self-healing and self-regulating, it is enough for an osteopath to align the body so that it may slow down its entropy to the best of its abilities.



Kurt: In your opinion, in general, what is the importance of *history* to osteopathy?

Jason: I do find that with history, at face value, you only have your own personal interpretation. Dr. Still says, if we can go back to a time before the thing existed and understand why there was a need for this thing, history gives us that opportunity to understand the development and maybe see the other facets or angles of this person or event, particularly in osteopathy. What created the need? Are there other needs that we are neglecting? Understanding the historical context helps you look at osteopathy from a new perspective, that it was something very much needed, what helped us formulate it, and if we lose our way, are we able through the history to find a way back if we swing too far. History can bring us back to our original mission.

Essentially, everything comes from a need, and if that need changes we can look to make sure that we are still on the right path. Now that osteopathy has reached 125 years of teaching, that's where history comes in: are we teaching it in a way that serves a good purpose to the practitioner and patient?

Kurt: It's interesting in looking at some of the old sciences, such as the sciences that influenced A. T. Still (mesmerism, phrenology and so on). We look at phrenology now as complete pseudo-science but it still laid the foundation for some of the aspects of psychology.

Jason: I think you're on the point: in dealing with the unknown you try to explain it as best as you can and seeing if, as Dr. Still had said, "does something stick, connect?" His favorite thing was to "jump to the other side of the river and when I come back, see if any clay sticks to my toes." That was his way of talking about trying different things, seeing if something was useful, can I work with this, does that get me something, and find some ideas that were successful and some that weren't. With mesmerism and magnetic healing, Still found that the notion had a powerful influence on people

[editor's note: a placebo effect], and so that has stood the test of time. He tried different water therapies that could have an effect on the physiology, so if you want someone to sweat you could wrap them in a wet blanket, and Dr. Still would see what kind of value that could bring to the patient.

But in the end, he found that there was nothing consistent and even manipulation has been used in many ancient cultures. For instance, he talks about the Shawnee showing him some ways of putting a hip back; he thought it was a very crude method, using a horse to pull your leg, but it at least got him thinking along these lines that maybe there was a way to do this better. So, again, trying new stuff and formulating a distinct teaching pattern and a system is what gave Still the recognition for creating osteopathy—not that it hasn't been around in many forms for centuries. It does make sense that to other cultures that have used it, this is a very direct way to teach it.

Kurt: So essentially Still was amalgamating a huge amount of scientific disciplines, discarding the stuff that was useless and refining what was left.

Jason: Yes, and I think that's what the difference was; instead of assuming it didn't work, give it a chance and then evaluate it. After years of using calomel [note: mercury chloride] and seeing no benefit, kids lose their teeth and their hair falls out and they are still sick, there is no evidence that it had any benefits. It harmed people, so why would we continue to use this treatment? I get that we initially try it out, but why do we keep using it when there is no evidence of a benefit?

Kurt: In that same vein, with our school, Kirksville, and Steven Paulus, we keep going back to the old literature, not necessarily taking it literally, but as a way to keep us on the path—but you wouldn't see that with medicine. You wouldn't see a modern physician going back and reading an old copy of *Principles and Practice* by William Osler; what benefit would we get with history?

Jason: I agree. The difference is that when we are looking at medicine in general we are talking about science and no aspect of art or philosophy within it, and I think that's what frustrated Dr. Still. Yes, techniques are good, but they will only take you so far, and there are the elements of interacting with your patient as far as knowing their background story. They are unique, that when osteopathy looks at someone, it's their history, their injuries, that makes them unique on their personal journey of health and life—and how can we improve that? As opposed to taking a pill as part of a procedure and treating everyone generally, osteopathy instead focuses on the individual.

Really, it's the patient that draws you to their issue in many ways more than yourself, and it's this interaction with the patient that guides the treatment. While I'm not saying that isn't true with medical doctors, in this day and age you find the physician is more about the textbook and treats you as they would with everyone else.

Dr. Still kept reminding us to treat the patient and not the disease, and also to keep in mind that the structures have an entirely different appearance and feel in death than in life; while it's good to work with cadavers it's important to know that under that flesh is a spirit and that we should understand that concept before we treat the body. Going back to history, I think it is great that Dr. Still shared many truths that are ageless and we can keep going back to them.

Kurt: Along with history, what was the importance of philosophy to osteopathy and Still?

Jason: Philosophy is a way of viewing things, and in his case, the manipulation techniques could give you a result but the philosophy in itself is about health. He treated based on what the patient needed. Much like an analogy of a punctured tire that leaks, you can keep pumping it up but you won't be able to fix the real problem until that leak has been plugged. This is like constantly manipulating without understanding the source of the problem: you're just creating temporary solutions. Dr. Still would sometimes just focus on dealing with someone's nutrition if he felt that was the major source of the problems.

This showed itself when one of Dr. Still's students, E.D. Barber, took the classroom notes of Dr. Still and published them, without giving credit to the founder. But what really bothered Dr. Still was that he missed the essence of osteopathy; Barber just wrote a list of techniques to deal with a list of problems. Basically, Barber said osteopathy was a bunch of techniques while Still said it was anatomy, physiology, chemistry, psychology, and listed all of these sciences that encompassed far more than manipulation. It's not just about the techniques; it's about the global perspective of a patient's health.

Kurt: So essentially E.D. Barber had stripped the philosophy and ultimately the heart of osteopathy out of that first book. ... Moving along to the museum, you've been making a lot of changes, new additions. How's it progressing?

Jason: We began in 1934 as more of a curiosity collection of items—Dr. Still's boots, glasses, handwritten papers, early instruments. Touchstones to the past. But we went from a collection of artifacts to really telling the story of the profession. I don't think the museum was capable of telling the osteopathic story when it first opened decades ago. However, over time we looked for more information and facts that began to piece together this story, the story of Dr. Still. Once we made that the focus of our history, the question was now "How do we teach and tell the story of manipulative medicine?"

Kurt: How have the students been taking the museum?

Jason: The current students have really taken an interest in the history and the philosophy, so much so that this past year the students wanted to create a student association for history and osteopathic philosophy, named SAHOP.

Kurt: With Kirksville being the osteopathic mecca, you have great faculties and facilities, but do you find the legacy to be a huge draw for students?

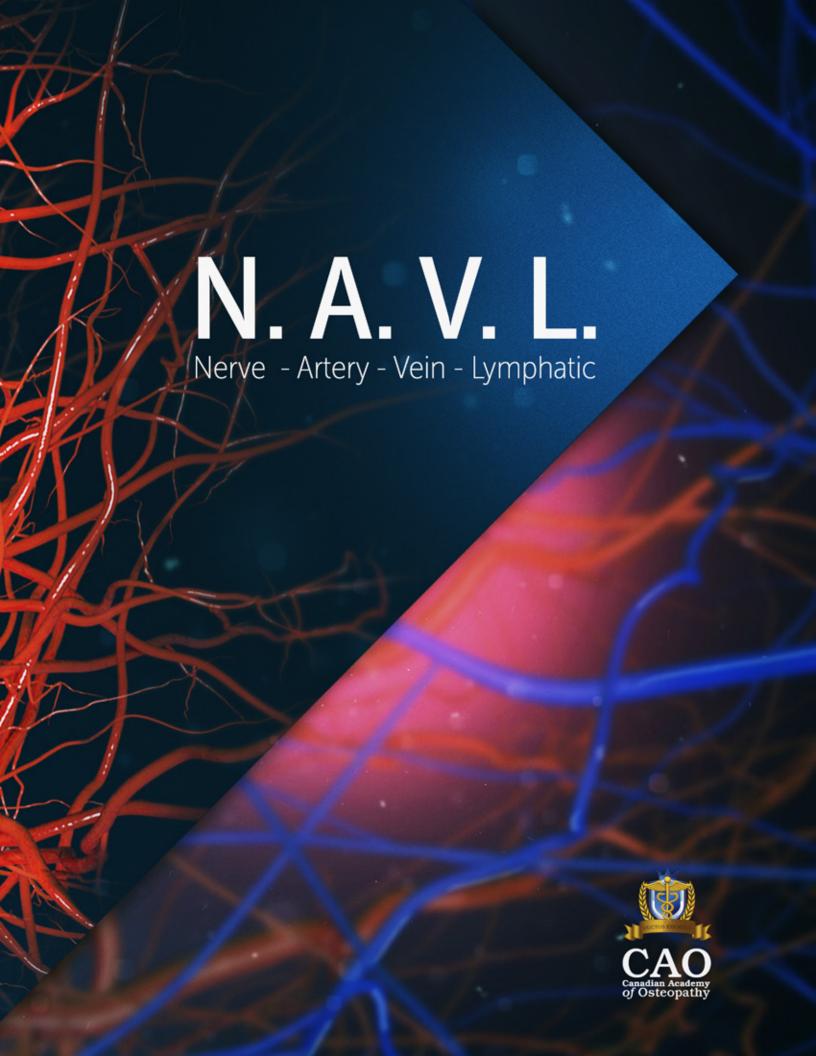
Jason: I think so. We get lots of students who go out of their way to get accepted to this school, and some who don't know the history learn to love it when they get here. In regards to the profession itself, Norman Gevitz in his book *The D.O.* said "As goes Kirksville, so goes the whole profession." It would be interesting to think what would happen if Kirksville ever went away; what would the effect be on the entire profession? You know, if we just decided to move the entire school to Arizona, do you think that would have an effect on everything osteopathic?

Kurt: I think it would. Right now research is a little behind for osteopathy and since so many D.O.s already drop the osteopathy portion, I think the only thing that's anchoring the profession is its history and philosophy.

Jason: Yes, I do think the ripple would be felt. You know, when you're in Kirksville, you see the sites Dr. Still saw, smell the air that he smelled and walk where he walked; it really brings you back to the roots of the profession unlike anywhere else in the world.

Kurt: Could you give a brief word on the *Feminist Touch* documentary?

Jason: In 2007 Dr. Tom Quinn said that he really appreciated what Dr. Still did to help women reach their academic abilities in medicine and I want to write about the women of the profession, from the past as well as current. Dr. Quinn finished his manuscript after 4-years and the Museum assisted in its publication in 2011. Then Dr. Quinn wanted his book told in a documentary. So we worked on it with him. Osteopathy in Kirksville really helped push women doctors out into the world. The public television network was really excited about this story. You can watch it online: www.wedu.org/thefemininetouch/





INTERVIEW with Robert Johnston

Principal of the Canadian Academy of Osteopathy in Hamilton

PART 2



By Kurt Witme

Kurt: Let's go a little more into what's in store for the CAO. What's the big projects on the way? You had also mentioned a research project as well.

Rob: The big press at the CAO is that we are very pleased with the outcome of the students—our students are fantastic. We have great practitioners leaving the school and as I said to you earlier, we are trying to find ways to do it better so there are some changes in the curriculum. We will be adding a whole lot more clinical programming, and I felt there is only so much theory that can be had osteopathically. You have to actually get your hands on some folks. So you are probably going to see, over time, the fourth year being completely dedicated to clinic, and that would be a 12-month clinical rotation.

We also want the school do more writing. I think we need to get our message out there and I was told if I travel more then this would be really great for the school, great for osteopathy, so I need to find ways to have folks help me teach classes so that I can get out and speak about the osteopathy that we are putting together here in Hamilton. So, I need to get back on the road again, and I find that difficult to do given the responsibility I have here. With almost 400 students, 50% of each day is taught by myself. I'm going to need a little more help on the teaching end.

We are also going to emphasize a lot more anatomy. We've brought in Dr. Dhruva Revanoor, who is a physician

and did a Master's degree in anatomy and he's coming in to do a whole course in clinical anatomy. So, I think that's going to be wonderful. Then we are going to back up a lot of our sciences and give students a lot of the information earlier, before their classroom semester, so they can prep a lot earlier. We are also probably going to have students qualify to get into the classroom semester, so they'd have to write a test stating they have read and gone through all of the online information and achieved a good score-based standing. I think the rigor is going to continuously heighten. I think we are going to be looking for different types of students; we are very happy with our current students but we might screen potential students differently. I could see us growing and moving into a new building, but I want to do that very carefully. There is no point right now expanding across the country, unless we had really, highly dependable people to do that.

So that's for the CAO. I'm also planning to do more writing. Some more books are on the way, and getting my thoughts on paper is a priority. We would like to be more involved with spreading this word in a kind of inclusive way that is not offensive, but trying to get people to understand where we are coming from, and igniting this what I call "classical flame"—not the ashes, but the flame. The point is to really try to teach people that classical osteopathy is progressive, not regressive. It is not about what happened in 1905; it's about what's going to happen tomorrow, and this is based Dr. Still's concepts and principles.



Kurt: Along that vein you had also mentioned the research project which, when brought up in your talk, created quite the discussion. What are the plans with that and where are you planning on taking that?

Rob: Well I want to say to you, quite frankly, that I don't know a whole lot about research. My entire life has been built around the table and helping folks with my hands, but I think there is going to be a time in the not-too-distant future where we are going to be able to resource people who know more about it than I do. And what I really want to do is give them the problem, give them the puzzle and say we need to be able to put something together in such a way that other folks understand what we do. Now how can you put together research that would hold water to those who want to be investigative? How can we put together research that can basically explain how we think and how we work, and some of the great outcomes we have? Eventually we would like to get one person who would be completely dedicated to that. It would be the first person I know of working with the 20,000 people we have going through our student clinic. But we have to hire the right individual that truly knows it, someone with a Ph.D. in research-oriented applications.

Kurt: And being able to have access to that student clinic is something that not a lot of places have the opportunity to do. Some of the problems plaguing alternative medicine research is the small sample sizes. There is a lot of great potential for us in that. Now there seems to be some conflict between research and practice. We need the research to help inform us and, more importantly, inform the public and other healthcare professionals. How can we reconcile the two; how can we do research that is high quality without sacrificing the art of osteopathy?

Rob: Well I think the art has to be appreciated, and that there can be multiple ways to treat someone and still get an effect. I think that can be interesting in research itself, stating that

we don't have to do the exact treatment and get the same outcome. The other interesting thing would be exploring this notion that the body is collective and integrative at all levels, and that when you treat the neck, you treat the hip, you treat the ear. And that would actually change, perhaps, the way we see sciences. This means we may need someone who can see the collective physiology, the collective anatomy, the collective neurology—and in Holland they have done that in many studies, with this notion of collective physiology.

Kurt: What are some of the projects you're working on?

Rob: I have a book on the lower limb. It's complete now and is just going through the illustration phases, and then I hope, wish, and pray that I can finish a book on the cranium. That book has been churning around in my head for about 5, maybe 7 years. I'm working off the temporomandibular joint and I'm moving it backwards, so I have a great image in my mind's eye about how we can deal with the facial skeleton, the cranial vault, the upper cervical spine, and how it really ties back into the bite.

Kurt: Anything else you want to say?

Rob: I just always want to finish off with thanking the students. You know, people ask me where I get my inspiration, how I learn, how I develop. And I always say stand up in front of 347 people on a day-to-day basis and answer all their questions. So many of you come here with such incredible backgrounds, so much knowledge, and you're using this knowledge when you're asking me questions, so I grow when I'm in your environment. You're not in mine; I'm in yours. When I'm in your environment and I have all these students ask me questions, and they're prodding me and changing over the course of time—and the entire class changes as an organism over 4 years—it's just an incredible thing to witness. That has really expanded my mind. So, people ask "Where does Johnston get his ideas? Where does he grow from?" It's my students. I thank them dearly.

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