Can TCM be supported by Nerve Placements and Anatomical Trains? A Comparative Review of Meridians & Acupoints against Anatomical Trains & Nerve Placements

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Abstract

Objective:

To compare Traditional Chinese Medicine (TCM) with Western Research through: (1) the comparison of Meridians and the Anatomy Trains model; (2) the comparison of Acupoints with nerve locations and functions.

Materials & Methods:

The Google Scholar database has been used to find papers for this comparison. For data which require most up to date, a filter from 2021 has been applied, no such filter have been applied to papers bringing definitions and functions. The official Anatomy Trains book and the Acupuncture Association of Charted Physiotherapists 'Let Qi Flow' book were used for the Meridian and Anatomy Trains comparison. The '*Acupoint Pocket Reference*' book was used for the acupoints and nerves section.

Results:

11 of the 12 meridians inspected were matched with an Anatomy Trains line. 2 of the 12 meridians have research supporting their effect, while the other 10 vary between partial research and no research at all to back their effect. 21 of 22 nerves inspected have been matched with an Acupoint. 12 of the 21 nerves shared a function with their corresponding acupoints, the other 9 do not share a function with the acupoint effect.

Conclusion:

While there is no clear answer, as both aims have been showing both positive and negative comparison outcomes, we can say in confidence that there are truths within TCM. We have found sources from the western academic world supporting the findings of TCM. While further research is required, TCM, on its different disciplines, can provide help to the public on varying conditions.

Abbreviations: Traditional Chinese Medicine – TCM, Dry Needling – DN, Sternocleidomastoid – SCM

Acknowledgements

We would like to thank the Acupuncture Association Of Chartered Physiotherapists (AACP) for allowing the use of their illustrations within this work.

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1.Literature Review

In China, traditional Chinese Medicine (TCM), is being practiced daily through public facilities, schools and hospitals (Hesketh and Zhu, 1997, Robinson et al., 2012, Tian, Wan and Tan, 2024). However, TCM is considered by many Western faculties a hoax with placebo effects (Kaptchuk, 2020, Liu et al., 2020, Zeng et al., 2022). Since its introduction into western medicine, there is a rise in TCM's popularity leading to more legislation around the subject, creating more laws, regulations and even acceptance from insurance companies world-wide (Wang et al., 2021).

Regardless of this acceptance, the ongoing debate surrounding the scientific credibility of TCM, with some literature dismissing it as placebo-based or pseudoscientific, it is essential to reassess its core principles through a structured, comparative lens. This review will explore TCM's foundational concepts, such as Qi (pronounced chi), Yin-Yang balance, and meridian theory, and examine how these align or contrast with principles found in more widely accepted practices, such as osteopathy, dry needling, and fascial anatomy. By drawing connections between seemingly disparate systems, this review seeks to highlight TCM's potential relevance within contemporary therapeutic frameworks and to provide clinicians with a broader perspective when addressing patient curiosity, scepticism, or interest in integrative care.

TCM is a wide term, enclosing within it different types of therapy and modalities, all revolve around the same principles of balance between Yin & Yang and Qi flow (Cheung, 2011, Xue and O'Brien, 2003). According to Cheung, TCM has been developed over thousands of years, being refined and better applied, allowing the practitioners to provide better service. Since it was the only form of medical practice until the 19th century, all medicinal research done in China at the time, is now considered part of TCM.

Before we examine the ideals of TCM, and their claimed effects on the body, we must first understand the ideas of Qi, and Yin and Yang. According to the Oxford Languages services for the Google Dictionary, Qi is "the circulating life force whose existence and properties are the basis of much Chinese philosophy and medicine". Checking the definition given by the Merriam-Webster dictionary gives a slightly different meaning: "vital energy that is held to animate the body internally and is of central importance in some Eastern systems of medical treatment (such as acupuncture) and of exercise or self-defence (such as tai chi)". Cambridge dictionary would bring the simple definition: "in Chinese traditional medicine, the life force**".** There is a lack of definitive meaning, however, the common conception of Qi in different dictionaries surrounds the idea of 'life force' and 'energy'. A study by Finando and Finando (2012), reviewed different publications surrounding the idea of Qi, concluding that Western Medicine does not have the correct tools, or phrasing to translate the meaning of it, or capture its essence. This conclusion may shed a light into the differences between different dictionaries when trying to define the word. For the rest of this paper, Qi will be defined as the life force present in every living organism.

Considering that western medicine cannot come with a proper translation for one of the key elements in TCM raises many concerns. In a review by Chen (2004), the author is raising the limitation of studying qi, as no research has been able to quantify or measure it. Instead of focusing on what is qi, or how it works, papers are focusing on physical effects of training methods. From a physical aspect, any exercise is better than no exercise, and we agree with Chen's limitation, as the body will change with an exercise regime, but can that change be attributed to qi or to the known effects of exercise? In their research, Bao (2020) states that while qi cannot be proven by science, the lack of proof does not prove its inexistence. This statement is given to remind practitioners that even though qi is not yet quantifiable by

research, that does not mean it does not exist, but on the same time, it reminds them that using a term that is not fully understood should be done with caution.

Searching the dictionaries for the definition of Yin and Yang resulted with the following: “being or comprising opposite and especially complementary elements” by the Merriam-Webster, according to Oxford References “Yin is the female, cold, dark, passive power, yang represents masculinity, light, and warmth” and continues with “The interplay of the two forces makes up *chi*, or the material principle governing the universe. Their balance is essential to harmony and health.”. A search through Cambridge Dictionary, requires the separation of Yin and Yang, according the Cambridge, Yin is “the female principle of the universe, represented as dark and negative” and Yang is “the male principle of the universe, represented as light and positive”. Unlike with the Qi definition, Yin and Yang are agreed upon, 2 opposing elements (female – male, cold – warm, dark – light, negative – positive). A definition provided by Fu et al. (2021) is “A concept of dualism, describing how opposite or contrary forces may actually be complementary, interconnected, and interdependent in the natural world.”. Understanding the principle that Yin and Yang are opposites which provide balance is key to understanding the outlook of TCM on health. To best understand the concept of Yin and Yang, we may look at drinking water. Water intake should be adequate, drinking too much water can lead to a life threatening condition known as water intoxication, which can result in death (Pini et al., 2025, Gardner, 2002, Farrel, 2003). On the other hand, not drinking enough water will lead to dehydration, which can cause increased fatigue and decreased short term memory in some cases (Grandjean and Grandjean, 2007) and death in others (Byard and Riches, 2005).

Looking through research to find a shred of evidence of the existence of Yin and Yang has brought a mathematical paper, combining many theoretical ideal from mechanics and quantum physics to bring an equation proving the existence of Yin and Yang (Yang, 2010). In contrast, Wang (2013) claims that yin and yang are just constructs, and don’t mean anything specific expect for opposites, one is negative and one is positive. Acknowledging the lack of consensus regarding qi in the western science, the mathematical equation brought by Yang raises a credibility issue. In TCM Qi and Yin and Yang are interrelated, if one cannot be agreed upon, how can the other be proven? Using Wang’s idea that Yin and Yang are merely ideals of opposing value has a larger impact and can be used later in research, if trials will measure positive and negative changes in the body in relation to qi related exercises.

After examining the definitions and contextual applications of Yin, Yang, and Qi, we can look into the combination of them in TCM. According the Adams (2016), Qi flow is dependent on Yin and Yang, a balance between Yin and Yang will allow for a good Qi flow. That being said, a lack of balance will distort the Qi flow. In TCM, a balanced body – within itself and the environment, is a healthy body, however, where there is imbalance, disease will follow (Dong and Zhang, 2001). This principle of TCM can be found in the Osteopathic Principles, principle 5 states: ‘*When normal adaptability is disrupted, or when environmental changes overcome the body’s capacity for self-maintenance, disease may ensue.*’ (Tyreman, 2013, Digiovanna, Schiowitz and Dowling, 2005, pp.10–15). In other words, according to this principle, if the body is out of balance due to environmental or internal reasons, disease will follow. It is noteworthy, that osteopathy, like TCM, is a controversial subject. In Spain, osteopathy is listed with other treatment modalities as a pseudoscience rather than a health treatment, and the Spanish government is trying to ban the field or reduce it to a subfield which is not recognized by the health committee (Ciardo, M. Sánchez and Miriam Jiménez Fernández, 2023). Thomson and Martini (2024) have also raised concerns about osteopathy having pseudoscientific basis, and suggest a close examination of what is used in the field to help practitioners differentiate between science and pseudoscience. The identical ideology between TCM and Osteopathic Medicine shows similarity between the two fields of practice, and while it notes how

advanced TCM ideology is compared to the time it was established, this relation between two different therapy ideologies has both a positive and negative impact on helping the case of TCM, as according to countries like Spain, this similarity is useless, another pseudoscientific claim, but in countries that recognize osteopathy as a valid scientific modality, this relation brings forth the possibility of TCM as being accurate and true.

TCM's control of Qi is done through 12 Meridian channels, which are divided between Yin and Yang (Stephenson and Acupuncture Association Of Chartered Physiotherapists [AACP], 2019, Flaws, 1997). According to Flaws and the AACP guide, the Yin meridians are: lung, spleen, heart, kidney, liver and the pericardium. The Yang meridians are: large intestine, stomach, small intestine, bladder, triple burner, and the gall bladder. Divided into 6 Yin and 6 Yang meridians, they provide balance to Qi flow, and allow TCM practitioners to treat different pathologies according to the presentation of the client.

Placed upon each meridian are varying number of acupuncture points, or acupoints. These points are specific sites in the human body that are used in different combinations to treat different pathologies (Lee et al., 2010). Each acupoint has a specific name and short version of 2 letters and a number, indicating the meridian it is on. For example, the point He Gu, also known as Union Valley is shortened to LI4, signifying it is the 4th point on the Large Intestine (LI) meridian (Flaws, 1997). According to Yang et al. (2024), there is not enough evidence to prove or disprove that acupoints react to human pathology and change their sensibility, making it inconclusive whether or not practitioners of TCM can diagnose a patient using acupoints as a diagnostic tool (Gao, 2025).

With the introduction of TCM into western medicine, acupuncture has influenced the treatments in the western world, and Dry Needling (DN), also known as Medical Acupuncture, Western Acupuncture and Western Medical Acupuncture have been created (Zhu and Most, 2016). In their paper, Zhu and Most describe the transition from using hollow needles to treat myofascial pain, to using acupuncture needles, and bringing us to what is known today as DN. DN has since evolved into 4 major disciplines: Trigger Point DN, Peripheral Nerve Stimulation Needling, Periosteal DN and Electroacupuncture (Ughreja and Prem, 2021, Kaye et al., 2025, Dunning et al., 2018, Anna Staehli Wiser et al., 2023, Carneiro et al., 2023, Yang et al., 2025, Yang et al., 2023, Yu et al., 2024, Zhang et al., 2023, Han et al., 2021, Yin et al., 2022).

In 2001, Thomas W. Myers have published and presented the idea of Anatomy Trains (Myers, 2020). The idea of Anatomy Trains is to look at the body as a whole, rather than through small parts and to find patterns in the musculoskeletal system, along with connections and links between the individual parts of the body. This idea can be found in TCM, where the body is examined as an interconnected whole (Langevin and Schnyer, 2017) and as the 1st Osteopathic principle indicating the *body is a unit* (Tyreman, 2013, Digiovanna, Schiowitz and Dowling, 2005, pp.10–15).

Given the ongoing debate around the legitimacy of TCM, and the variety of perspectives presented in current literature, it is essential to provide a structured comparison between TCM and more widely recognized therapeutic modalities. By doing so, this review aims to equip healthcare professionals with a clearer understanding of where TCM may align with or diverge from conventional practices, ultimately supporting more informed clinical decision-making and enhancing communication with clients who inquire about alternative treatment options.

While TCM is often viewed through the lens of scepticism, a closer examination reveals that some of its fundamental concepts resonate with established Western therapeutic principles, such as those found in Osteopathy and Anatomy Trains. However, the differences in language, methodology, and underlying philosophy have limited its integration into mainstream clinical practice. This review highlights the

importance of bridging these conceptual frameworks to enhance understanding and open avenues for integrative approaches.

As the acupoints and meridians are used in TCM to control Qi flow and thus promote health, this paper aims to check the validity of these two in comparison to research in the west. There are two aims for this paper: The first is to examine TCM's meridian system, and compare it to Myer's Anatomy Trains model; The second aim is to compare Peripheral Nerve Stimulation Needling with acupoints to check for correlation with functionality and location.

2.Introduction

TCM has been around for thousands of years, however, its precise first record is unknown. According to Wright (2024) there are claims it may be from 3,000 – 2,070 BC, however, there are also claims it may be from 8,000 – 3,500 BC. According to Zeng et al. (2021) the timeline is different, and the oldest record brought forth is from 1,600 BC. Continuing the search, in their book, Gyer, Michael and Tolson (2016) bring evidence of first attempts at disease recording in TCM to take place at 1,500 BC (pp. 14). With the lack of consensus between different sources, it is can only be agreed that TCM has existed for over 3,500 years as that is the latest date found in the literature reviewed.

From the mid-17th century, missionaries arrived to China to introduce Western Medicine for the first time. This trade of knowledge was a 2 way stream, in which the TCM doctors got to see the ideals and research done on the west, and the missionaries got to learn TCM. Over the years with the exchange of knowledge, the debate about the validity of TCM has begun. One group claimed TCM is a product of superstition and the medieval way China was built upon. According to that group, TCM should not be respected or even looked upon, and it is probably best to disregard it and use only western knowledge. On the other side, there were those who claimed that TCM is superior and should remain the main medicinal system in China. Between the two opposites, emerged a group that said TCM can enrich the west, all while the west can enrich TCM, allowing the 2 medicinal philosophies to complement each other (Keji and Hao, 2003). This debate, is on-going to date, with some professionals cancelling TCM, and refer to it as a placebo therapy (Kaptchuk, 2020, Liu et al., 2020, Zeng et al., 2022).

First introduced in 1941, but only caught attention and interest in the 1970's and 1980's, a more acceptable modality in western medication arrived, known as DN (Legge, 2014), which evolved from TCM's Acupuncture (Zhu and Most, 2016). The main difference between the modalities is that DN is based upon current research, anatomy, physiology and pathology (Gyer, Michael and Tolson, 2016 pp. 9), while TCM's Acupuncture that is based on Yin-Yang, Qi and Meridians. DN is a widely recognized modality in the scope of physical therapy worldwide (Dommerholt, Bron and Franssen, 2006, Gattie, Cleland and Snodgrass, 2017, Sánchez-Infante et al., 2021), and is a growing topic for research (Dommerholt et al., 2015).

In 2001, a new approach for body examination and treatment is presented by Thomas W. Myers – Anatomy Trains (Myers, 2020). According to Myers, the technique we use to treat the body is not as important as noticing the pattern that needs to occur. In other words, Myers approach is to change patterns in a client's motion, with any technique a practitioner knows. In his view, the reason for the outcome is irrelevant, as long as the application is aimed to facilitate the desired change and support a more accurate motion.

Myers was not the first to look at the body as a whole, rather than its counterparts. Davis (2009) points out that it was Janet Travell's descriptions that put the separate anatomy and physiology outlook of the body under an investigative lens. Travell is still regarded as one of the most insightful sources for myofascial, and myofascial related pain. Being influenced by Kellgren's work on referred pain to neighbouring and distant tissues in the mid 1900's, Travell has looked into the fascial systems, published 2 books with her colleague Simons, published over 40 research papers on the subject, and coined the term "Myofascial Trigger Point" in the 1950's with her colleague Rinzler (Shah et al., 2015).

A study conducted by Bai et al. (2011) looked into different imaging techniques from different disciplines, and had speculated that some fascia structures seem to follow the meridian network in TCM. The study ended inconclusive, as the authors mentioned that more in-depth outlook of imaging should be compared to TCM's meridians, and connections should be investigated further. It is noteworthy to know

the authors mentioned that if further evidence is aligning with their findings, this could possibly help apply modern ideals to TCM, and perhaps allow for longevity studies in the future.

Chapter 12 of the book '*Fascia, Function and Medical Applications*' (pp. 149 – 173, 2020) is brought by Myers. In the chapter, Myers' discussing the relation of different muscles as part of a group, and ties the ideas of Anatomy Trains with the myofascial world. Describing the fascia's role with force transmission, and underlining the importance of shifting away from the "isolated muscle theory". Myers had also shared within the chapter different Anatomy Trains, and explains their role in Non-Specific Lower Back Pain. A very common condition often seen in many clinics, is broken down to muscle groups that are not always obvious, but can cause a pattern dysfunction that could eventually lead to Non-Specific Lower Back Pain.

The role of Acupoints and their scientific base has been a source for debate and research for a while. In their review, Li et al. (2015), have looked into the different aspects of acupoints in current research. Structurally, they found different authors saying that different points are found in proximity to a large pool of nerve endings. Checking the electrical properties of some points have shown that they have a lower electrical resistance compared with non-acupoints tested. In other words, the skin around acupoints is more sensitive to electrical changes and can have a bigger affect compared with the same low current if it was passed through a non-acupoint skin. Checking the biomolecular level, some research has found that needling an acupoint will cause a chain reaction of biomolecules, such as adenosine, to be released on a higher rate compared with nonacupoint. From a different angle, the review also found papers showing higher concentrations of calcium, iron, copper and zinc around acupoints when compared with nonacupoints.

Examining the current available data and research made on meridians and acupoints, the aims of this comparison review are: 1)to look further into the connection between TCM and Fascia using the Anatomy Trains model and the Meridian network, and; 2)compare acupoints to known anatomical landmarks, specifically looking at the nervous system, following the structural claim shown in the review by Li et al. (2015). There is high value for comparing Myofascial Trigger Points with acupoints in the investigation of meridians and fascia, however, this comparison falls out of the scope of this review. It is recommended that future reviews will investigate this relation in greater detail.

3.Material & Methods

The comparison done in this review will be based on the books: '*Let Qi Flow : an AACP masterclass guide to the 12 meridians : plus secondary vessels and points*' (2019) and '*ANATOMY TRAINS : myofascial meridians for manual and movement therapists*' (2020) for the Meridian – Anatomy Trains section; and '*Acupoint Pocket Reference*' (1997) and research papers relating to each nerve individually investigating the specific nerves provided in the Peripheral Nerve Stimulation Needling part of the Dry Needling course.

Nerve and Anatomy Train function will be compared with TCM claims of corresponding acupoint and meridians respectively.

All Research brought was used by the Google Scholar database. No other database has been used to locate relevant research. For papers used to find figures and statistics, a filter of papers from 2021 have been applied. Papers used for definitions or anatomical function were not applied with any filter, while we understand that definitions and functions may change with time, applying this filter to all definition searches would reduce the pool of available data, and might not provide a result at all.

All illustration of meridians are taken from the AACP's book, with their written permission to use them. Illustrations of Anatomy Trains have been independently created according to the original work found in the book.

4.Comparative Analysis

For clarity, we have divided the comparisons in two parts: 'Meridians and the Anatomy Trains Model' which will present both TCM and Myers' approach to the body; followed by 'Acupoints and the Nervous system' which will present the locations of acupoints along with any optional nerve relating to the area.

4.1.Meridians and the Anatomy Trains Model

In order to avoid constant referencing Myers (2020) and Stephenson and Acupuncture Association Of Chartered Physiotherapists (2019), we note here that any data relating to TCM and the meridians, is taken from Stephenson and the association, and any data relating to an anatomy train line is taken from Myers. Any data presented not taken from those sources will be referenced accordingly.

4.1.1.Lung Meridian Vs. Deep Front Arm Line

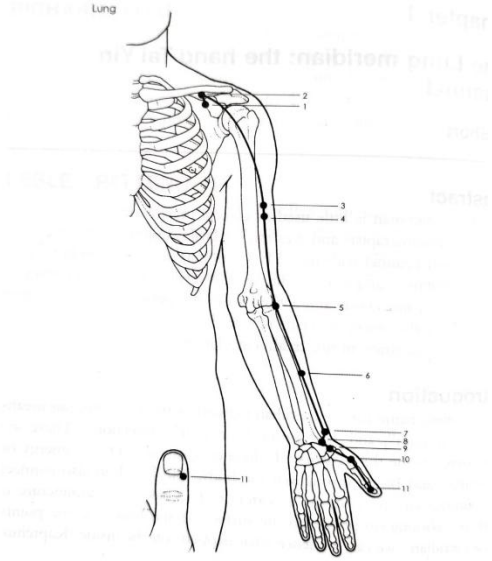


Figure 1.1

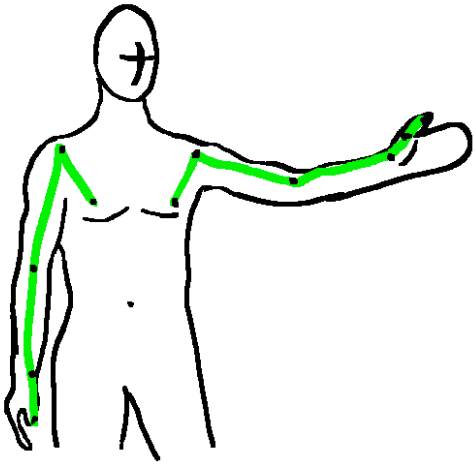


Figure 1.2

The Lung Meridian (LU) in TCM (figure 1.1) has 5 functions in the regulation of the body: Control respiration, regulate defensive Qi (immune system), regulate water pathways (urine, sweat, lymph), control skin and body hair, and open the nose. According to this scheme, respiratory issues, skin conditions, lack of urination and swelling can be treated by following the points on the lung meridian.

Anatomy trains brings us the Deep Front Arm Line (figure 1.2), this line is part of a group of 4 lines running through the arm. These lines have great impact on our shoulder location, which will result in an impact on the ribs, neck, lower back and our breathing functions. The Deep Front Arm Line starts from the 3rd to 5th rib and stretches out to the thumb. This connection to the ribs and muscles such as Pectoralis Minor, Subclavius and the Clavipectoral fascia gives it an important role in breathing.

A further look into both the meridian and the line shows that they follow a very similar path. While the line starts from the 5th rib, it merges with the meridian around the Acromioclavicular joint. They both continue the path through the lateral aspect of the arm and into the thumb. This overlay of the line and the meridian with one another is the first step of backing up the presence of some meridians in our bodies.

As mentioned, Anatomy Trains is based on the idea that relating tissues affect one another, so any disturbance along a line can have an effect on the functions of this line. While TCM explains the regulation of breathing on the Lung meridian through the flow of Qi, Anatomy Trains have shown that the Deep Front Arm Line is associated with breathing structures in modern anatomy, and thus strengthens the claim of TCM that this meridian can be used for respiratory issues.

4.1.2. Large Intestine Meridian Vs. Superficial Back Arm Line

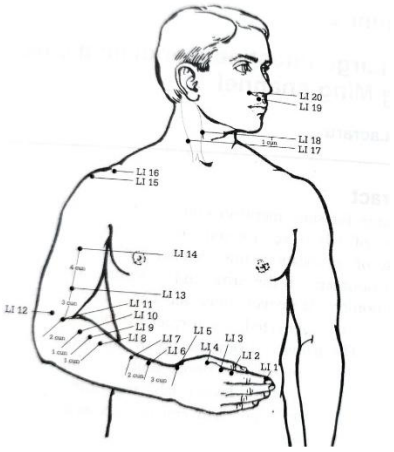


Figure 2.1

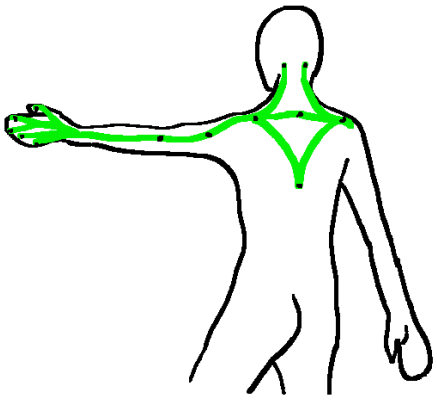


Figure 2.2

The Large Intestine (LI) Meridian in TCM (figure 2.1) is related to the Lung meridian, and treating it can also affect respiratory issues. However, the major role of this meridian is to help with digestion and prevent diarrhea or constipation. It is claimed that this meridian is related to the feeling of grief, as grief that has not been dealt with can cause chronic constipation, but treatment of this meridian can help someone have a calmer mind, which in turn will help with letting go of grief and resume regular defecation.

Another of the 4 lines of the arm in Anatomy Trains is the Superficial Back Arm Line (figure 2.2). Starting from the Occipital ridge, Nuchal ligament and Thoracic spinous processes, following through the lateral part of the arm and forearm and ending in the posterior tip of each finger. Along this route, from the back of the skull and on the back of the arm, the line has a stop on the front of the shoulder, more specifically on the acromion and the lateral third of the clavicle. This line tends to get overworked or misused when the posture is not optimal, meaning the rib cage or spine falls under the shoulder and forms a kyphotic position.

A close evaluation of the line and the meridian confirms that while the routes are not an exact match, the meridian is included within the line. The facial route in the meridian is not part of the line, and that is the major difference between the two.

As discussed earlier, the 4 arm lines of anatomy trains are interrelated, this aligns with the treatment of respiratory pathologies through the Large Intestine meridian, however, the role for digestion or mood has not been supported by the anatomy trains model. Future investigation into rib cage position and digestion may provide evidence of this relation, to point, we have found no supportive evidence to that claim.

4.1.3. Stomach Meridian Vs. Superficial Front Line

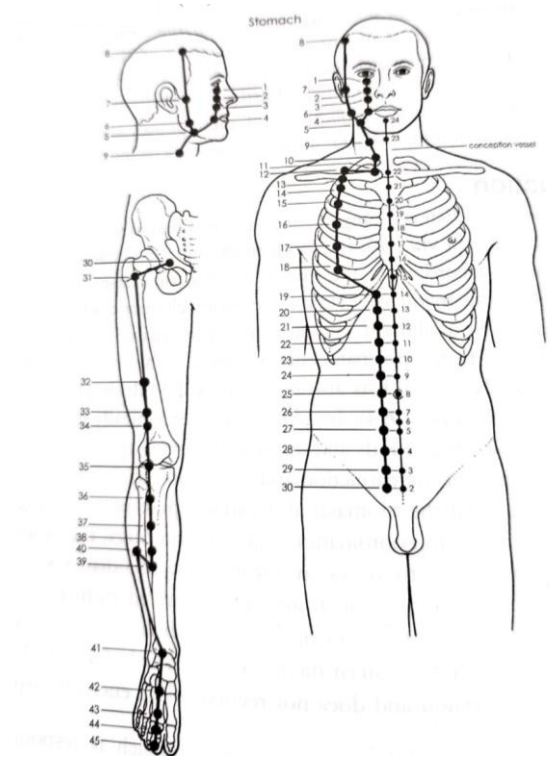


Figure 3.1

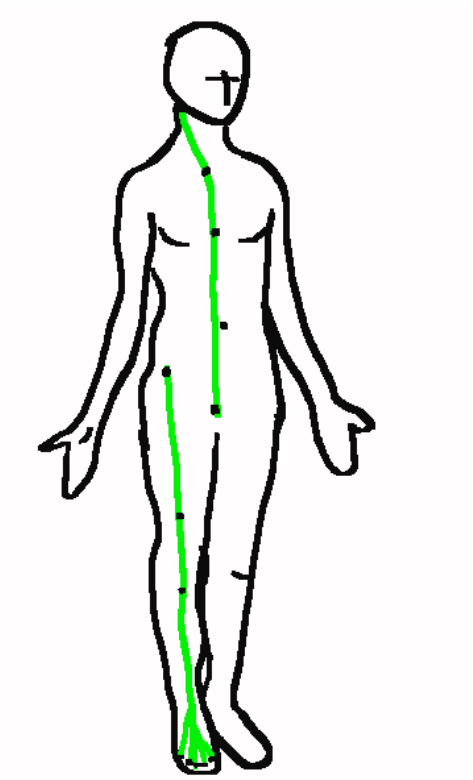


Figure 3.2

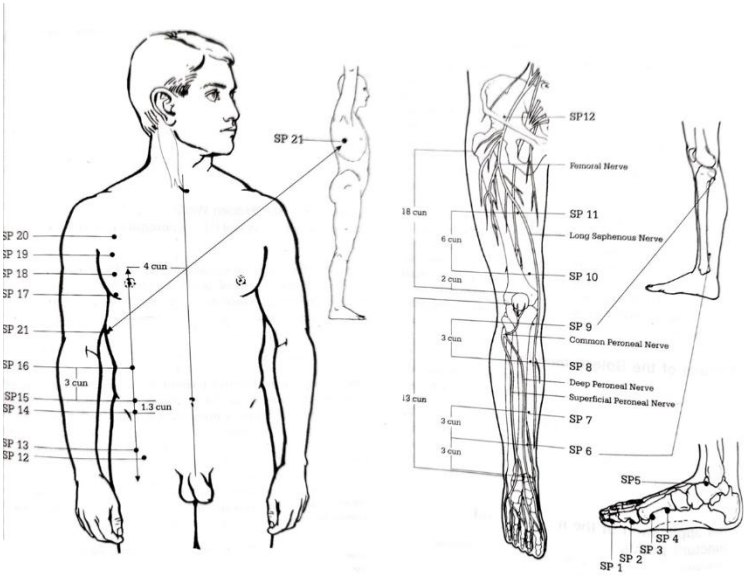
According to TCM, the Stomach (ST) Meridian (figure 3.1) is responsible for digestion of food and water and their distribution in the body. Another function attributed to the meridian is the extraction of postnatal energy (the feeling a woman has after giving birth) from the food and water digested and sending it through the body. This meridian also provides relief to insomnia, headaches sinusitis induced pain, lower leg and foot stiffness, and food allergies.

The Superficial Front Line (figure 3.2) stretches from the scalp fascia, running on the front part of the body reaching the dorsal surface of the toes. The main function of the line is to provide support and balance to the body parts which reach forward of the axial line of the skeleton and into gravity. Another one of the functions it provides is protection of the internal organs in the abdomen and chest cavity.

Examining the path the meridian and the line follows offers a very similar route, with the exclusion of the face. Both the line and the meridian run on the front of the body, starting at the side of the neck, centring around the rib cage and following the abdominal anterior wall down to the pelvis, later starting from the hip, and following a median line on the leg towards the foot.

While there is no relation or proof in other sources regarding digestion, the attachment of the Superior Front Line to the scalp, specifically to the Occiput, Parietal and Temporal bones can indicate a relation to headaches and sinus related pain. One of the surfaces of the sinus is the basilar aspect of the Occipital bone (Anusha et al., 2013). Having a pull on that bone, may change the structure of the sinus and cause sinus induced pain. Getting the line to function and be positioned correctly could have an effect on the sinus, supporting this claim made in TCM. Further research should look on the effects of tight abdominal wall and digestion, to check the validity of TCM claim regarding digestion.

4.1.4. Spleen Meridian Vs. Spiral Line



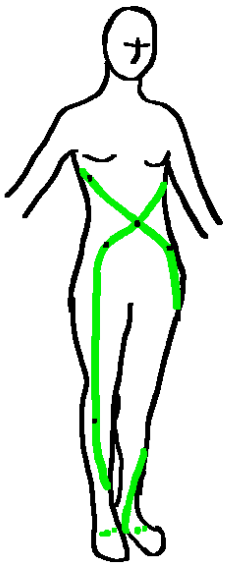


Figure 4.1 *Figure 4.2*

The Spleen (SP) Meridian (figure 4.1) in TCM is paired with the Stomach Meridian. The spleen, according to TCM, is taking digested nutrients from the stomach, transforms them into the blood, fluids and qi, and moves them around the body. Due to the attribute of controlling and moving the blood and qi, any spleen dysfunction can bring issues. If the spleen is failing with moving the blood, there will be excessive bleeding in the body. If the spleen can't push the qi up, the body will not be positioned correctly, leading to varicose veins and poor muscle tone. Pain to the abdomen, vomiting after meals, diarrhea, chest pain and pain/stiffness to the base of the tongue are related to imbalanced Spleen Meridian.

The Spiral Line, as the name suggests, is a line that is crossing the body and switches sides twice along its course. The spiral line originates on the back of the skull on the occipital ridge, reaches the base of the 1st metatarsal and return to the skull on the posterior side of the body. During the course, there are two side switches occurring, the first switch happens between the scapulae, while the second switch is performed at the level of the umbilicus. Figure 4.2 brings only the anterior aspect of the line, from the Ribs to the 1st metatarsal.

Both the line and the meridian follow a similar path when inspecting the line on the anterior aspect. The meridian arrives from beneath the armpit, and follows a straight line on the abdomen, and later moves medially on the leg, while the line also follows the ribs from under the armpit, however, crosses over on the abdomen and switches between left and right, to the enter the leg laterally and follow it on a medial line from the knee and below. A spiral interchange is a unique and complex route, but most the main points of the meridian are still positioned in proximity to the line.

There is no evidence the line has any effect on blood flow from the heart, however, due to the wrap around nature of the line on the rib cage, tension on the line can lower the chest cavity by not allowing the ribs to move freely into inspiration. According to a study by Karamolegkos, Albanese and Chbat (2021), changes in the pressure within the rib cage cavity has effects on blood flow and blood supply of the heart. Using this data, we can assume that releasing tension on the line, allowing the ribs to open with no restriction will have effects on the blood flow and heart function. For the moment it is just an

assumption, and future studies focusing on the effects of spiral line tension on blood flow and heart function should be made.

4.1.5. Heart Meridian Vs. Superficial Front Arm Line

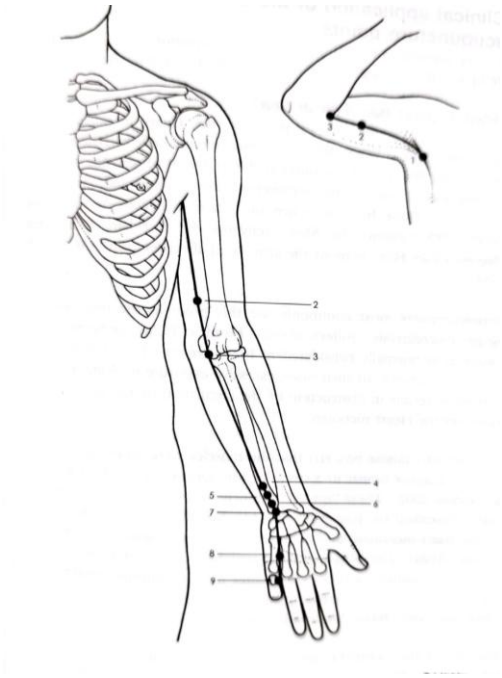


Figure 5.1

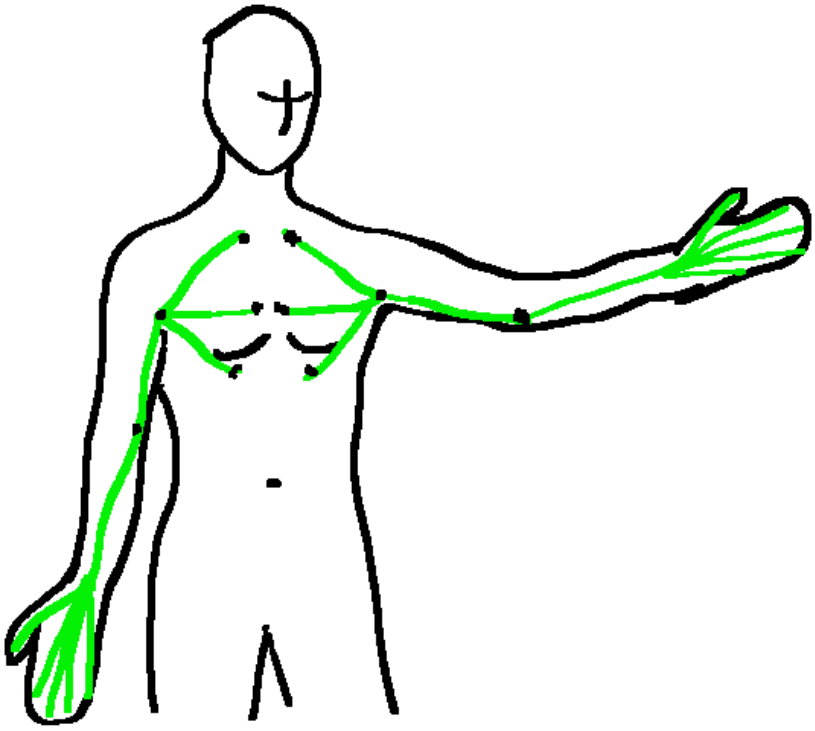


Figure 5.2

In TCM the heart is considered the most important internal organ, as it governs and controls them all. The heart's functions are as followed: govern the blood and control the blood vessels; complexion manifestation - skin colour, especially on the face; housing the mind – holding the spirit of the body along with the ability to think and hold memories; controlling the tongue – sense of smell and taste and the overall colouring of the tongue; control sweat. If of any of the above functions are disrupted, the Heart (HT) Meridian (figure 5.1) will be treated to restore proper flow of the qi and resume regular function.

Originating from the medial third of the clavicle, rib cartilages and lower ribs, and inserting the tips of the fingers from the palmar aspect runs the Superficial Front Arm Line (figure 5.2). This line is the 3rd of the 4 lines presented in the paper so far, and works in conjunction with the others. This line controls arm positioning, and having both Latissimus Dorsi and Pectoralis Major part of it, it is helping us with a range of different motions controlling the shoulder's interactions with the environment around us.

Examining the route both the line and the meridian follow, we can find a corelation from the axillar space and distal towards the wrist. The line on the Anatomy Trains contains larger surfaces in the chest, which are not included in the meridian, but also contains a larger surface on the palm of the hand, which includes the meridian's route.

While there is no obvious corelation between the line and the meridian, a paper by Cunha et al. (2021) has found a corelation between lower muscle mass in Pectoralis Major muscle, and heart failure incidences in people with left ventricular ejection fraction < 40%. Future research can concentrate on the relation between muscle growth and fascia tension, to see if there is a link between tight fascia and inability to grow muscles properly.

4.1.6. Small Intestine Meridian Vs. Deep Back Arm Line

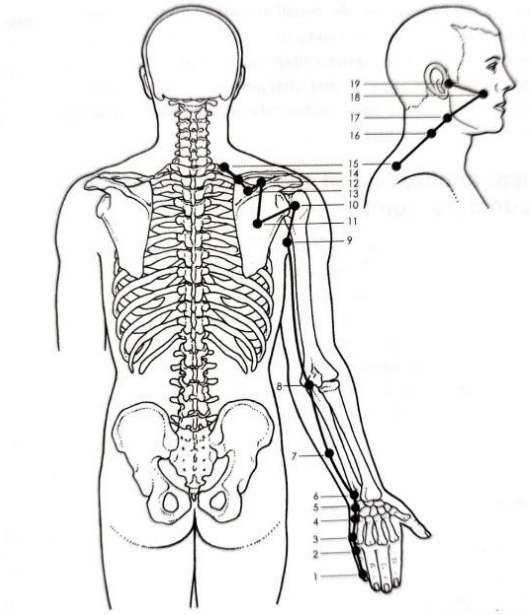


Figure 6.1

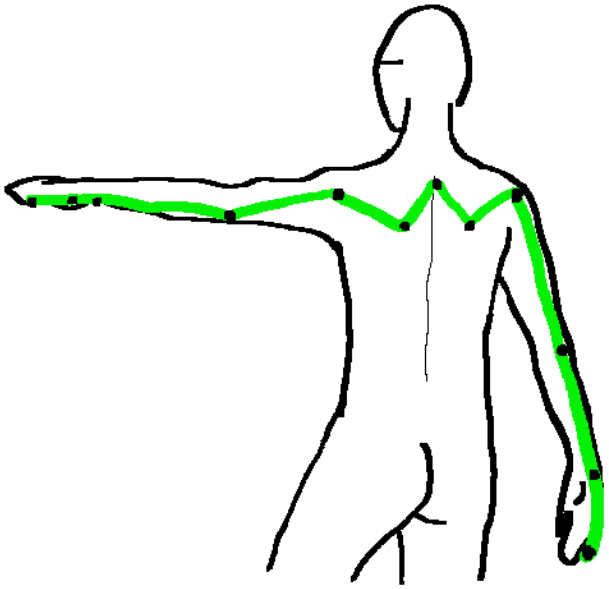


Figure 6.2

The Small Intestine (SI) in TCM has similar functions to western medicine. The primary work of the small intestine is to separate solids from fluids, send the waste to the large intestine and bladder for extraction, while sending the usable material to the spleen for transportation around the body. More attributes of the small intestine are purification of the blood (along with the heart), and affecting the state of mind, dream state, clarity of thought, decision making and psychological well-being. The Small Intestine Meridian (figure 6.1) is affecting the mind just as it is affecting the gut, it helps to separate important from irrelevant and allows the thought process and decision making to take place more efficiently (Woodward, 2025).

The last of the 4 lines of the arm is the Deep Back Arm Line (figure 6.2). This line runs from the at the Rhomboids insertion to the spine, and follows a path until the little finger. It's primary function is to adjust the elbow angle, control the amount of side to side movement of the upper body while in the all fours position, and stabilize the hand from the back of the shoulder.

While the meridian is traced all the way to the face, they both share a similar route from the scapula to the little finger. They are both running on the posterior aspect of the body. This lack of involvement of the face in the anatomy trains triggers the thought, have TCM included the face due to its properties and addition to the meridian's activity? This is the second instance so far that TCM had a larger inclusion area, compared to the areas seen in Anatomy Trains.

Current research have yet to find a relation between the functions attributed to the meridian and the line. Future studies should focus on testing cognitive abilities before and after treatment along the line, and see if there is a correlation between the mental state and ability of an individual and the treatment of the Deep Back Arm Line.

4.1.7. Bladder Meridian Vs. Superficial Back Line

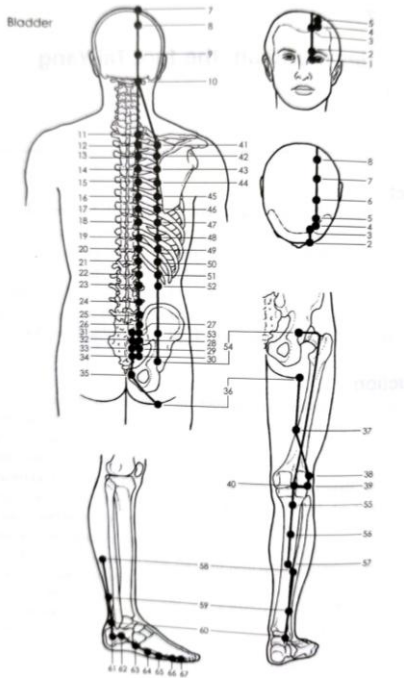


Figure 7.1

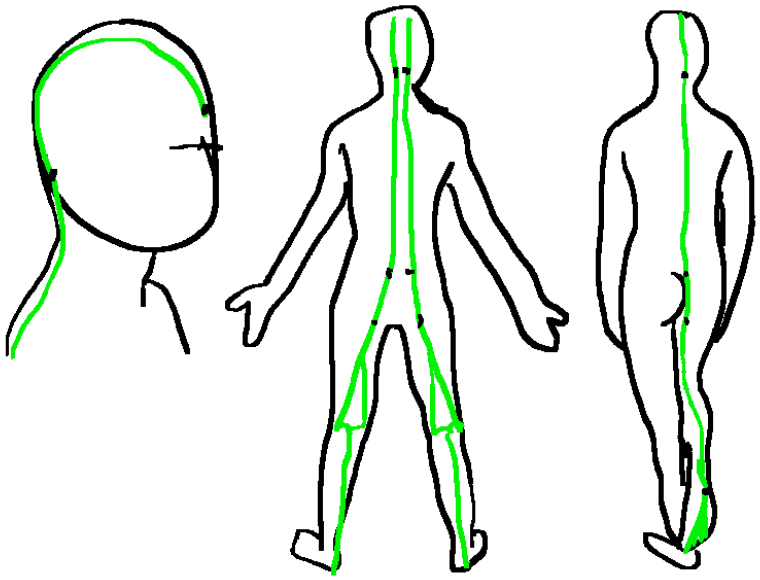


Figure7.2

The Bladder (BL) Meridian (figure 7.1) is the largest of all meridians. In TCM, the bladder is responsible for creating, storing and extracting urine from the body. According to Wakefield (2014), bladder disorders in TCM can present with: headaches, runny nose, neck stiffness, body ache, fever, painful and teary eyes, chills and clogged sinuses. From a psychological aspect, Wakefield brings up fears and phobias, which shows the mental connection of this meridian.

The Superficial Back Line, originates from the Supraorbital ridge of the Frontal bone, and run through the back of the body all the way to the Plantar Surface of the toes. The line's main function is postural control, keeping the body in an upright position. With the exception of the portion below the knee, the line is creating an extension. The knee and ankle will flex and plantar flex respectively along the line.

Both the line and the meridian run on almost a perfect overlapping routes. Both are going from the top of the eye to the foot through the back. These slight differences are not significant, and could arise from the slight changes in the anatomy structure between different ethnic groups (Lin, Kamath and Malik, 2020).

While searching for connections between TCM function and anatomy trains, the first notable is the nose related function, such as a runny nose, sinusitis and teary eyes. Anatomy trains have shown that the line begins on the Frontal bone, this bone is a part of the structure of the sinus (Papadopoulou et al., 2021). Second notable connection is the neck stiffness, as the line runs through the neck, and is in charge of extending it. A study by Fernández-de-las-Peñas et al. (2010), inspected the referred pain pattern of myofascial trigger points. In their research, they have shown that trigger points in the Upper Trapezius, Semispinalis and Splenius muscles can cause different types of headaches. These muscles are in proximity to the line described, with potential effect on the line's described path, which relates this to the headaches described in TCM. It has been shown that headaches are related to a reduced cognitive ability (Begasse de

Dhaem and Robbins, 2022, Martins et al., 2012), which can be related to fears and phobias, however further research should be conducted on that matter.

4.1.8 Pericardium Meridian Vs. Superficial Front Arm Line

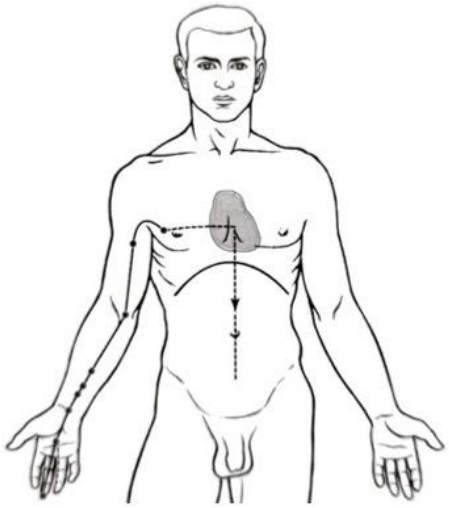


Figure 8

In TCM, the Pericardium (PC) is not an independent organ, but is supportive of the Heart. The Pericardium acts as a protector of the heart, allowing it to do its function well (refer to section 4.1.5 for heart functions in TCM). With a dysfunction in the Pericardium, the heart function will be altered and so it is hard to distinguish between the two. According to Wakefield (2014), clients may present with a swollen armpit fold, spasms in elbow, forearm, hand & feet, tension in the chest and lower ribs, heart palpitations, depression, cardiac pain, syncope and restlessness. Treatment to the Pericardium Meridian (figure 8) should be done with any of those symptoms and to treat Heart meridian issues.

The Superficial Front Arm Line have been discussed on section 4.1.5 and shown in figure 5.2.

Due to the proximity and entwined functionality between the Pericardium and Heart Meridians, it is no surprise that the line includes both. As mentioned before, the line contains a larger area than the heart meridian, as it has an additional hold on the chest and the full hand. The Pericardium starts at the chest, and ends on the middle finger, thus being included within the line.

The line's grab on the chest can corelate with Wakefield's client presentation of tension in the chest and heart palpitations. The rest of the symptoms have not been related to the muscles on the line, and future research can focus on those.

4.1.9. Triple Burner Meridian Vs. Superficial Back Arm Line

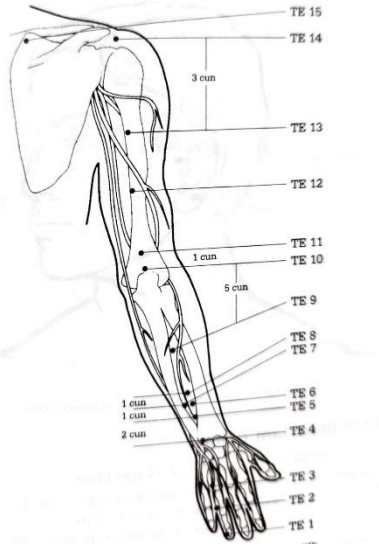


Figure 9

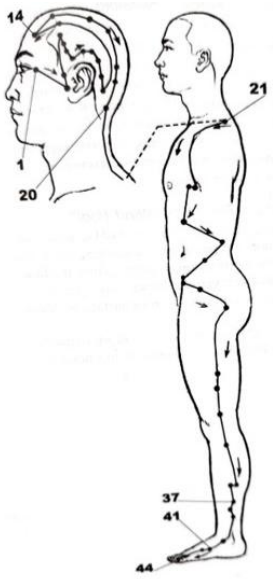
The Triple Burner (TB) has many different names in TCM. Some sources may refer to it as San Jiao (SJ), Triple Energizer (TE), Triple / Three Heater (TH) and Triple Warmer (TW). For this paper, it will be referred to as the Triple Burner Meridian (figure 9). In TCM, it is believed that the function of the Triple Burner is central heating of the body. By controlling the Three Jiaos (three burners), this meridian helps regulating the organs' temperature (Wakefield, 2014). Kajsa Landgren (2008, pp.105–124) explains that the Three Jiaos refer to 3 different organ sections, the top Jiao refers to the organs of breathing, middle Jiao refers to the organs of digestion and the bottom Jiao refers to the organs of urinary and genitalia system. Possible symptoms relating to dysfunction within the meridian according to Wakefield include: migraines, pain in ear and shoulder, sore throat, pain along the arm, neck & shoulder, urine retention, red eyes, nausea, bloating, diarrhea and thyroid dysfunctions.

The Superficial Back Arm Line (figure 2.2) is discussed in section 4.1.2.

While the routes of the meridian and the line do not match exactly, they are proximal to each other, with the line containing some portions of the meridian. It is important to note that the meridian has parts on the face, however, those were not included in the illustration, as they are not a part of any anatomy train.

As previously discussed, the relation of the line to the ribs may support the top Jiao relation, however, further research should be done to check for digestion and extraction of fluids while treating the line. If a digestion connection will be established, that will support the function claims of the Large Intestine meridian (figure 2.1) and would provide further support of the relations between TCM's Meridians and Anatomy Trains.

4.1.10. Gall Bladder Meridian Vs. Lateral Line



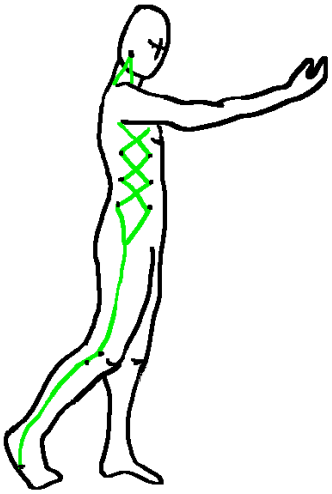


Figure 10.1 *Figure 10.2*

The function of the Gall Bladder (GB) in TCM is to allow decision making, prioritization, action taking and activity involving muscles and tendons. The Gall Bladder Meridian (figure 10.1) has some of the most used points in physiotherapy practice of acupuncture. The meridian crosses along the head and neck, the Trapezius, anterior aspect of the shoulder, posterior aspect of the hip, the Iliotibial Band, and the Peroneal muscles. According to Wakefield (2014), some of the symptoms of patients presenting with a dysfunction along the meridian include: tinnitus, pain in the jaw and ear, deafness, spasms on the side of the body, headaches, insomnia, anger, difficulty urinating, belching and depression.

The Lateral Line (Figure 10.2) originates from the Occipital ridge and Mastoid Process, and runs down along the sides of the body until reaching the bases of the 1st and 5th metatarsals. This line merges with the superficial front and back lines, and provides lateral stability. Noteworthy landmarks the line passes through are Sternocleidomastoid (SCM), External and Internal Abdominal Obliques.

Both the meridian and line are passing a similar route. Both run alongside the body, from the foot and up towards the head, both pass through the Peroneal muscle group and the Iliotibial Band, with the head as an addition of the meridian that does not reflect in the line.

Tinnitus, a condition that presents with the complaint of hearing sounds in one or both ears, with no external stimuli to match (Bauer, 2018), can be treated by releasing trigger points on the SCM (Lu and Chao, 2019, Aiman, Skaug and K. Fleming, 2021). In their paper, Lu and Chao have mentioned that their client has also complained about insomnia relating to their condition. These papers support TCM's claim that the meridian can treat tinnitus and insomnia. On another note, the abdominal wall has been linked to bloating and urinary inconsistency (Nunn and Douglas Stephens, 1961, Burzynski et al., 2022), and thus supporting the claim that the meridian can treat difficulty urinating through the line's internal and external abdominal obliques connection. Further research should investigate the relation between the line and the rest of the symptoms described for the meridian.

4.1.11 Liver Meridian Vs. Deep Front Line

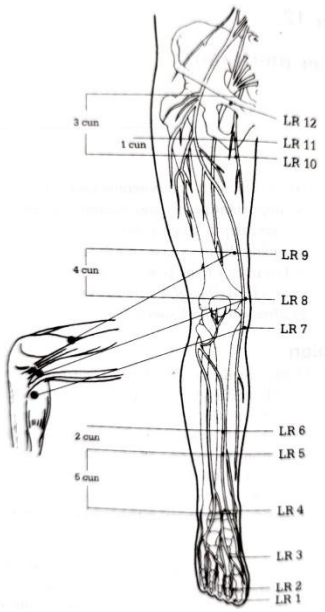


Figure 11.1

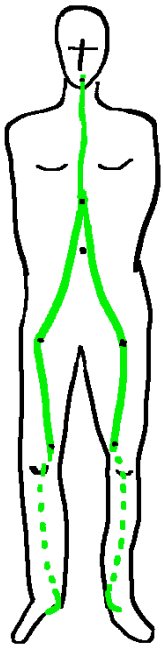


Figure 11.2

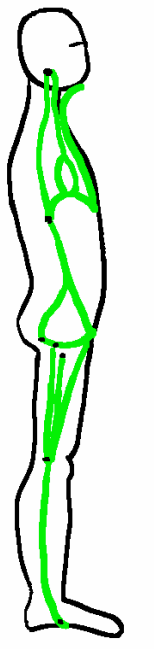


Figure 11.3

The Liver (LV) in TCM is responsible for the flow of Qi and body fluids through the body. It is affiliated with storing and releasing the blood to the muscles during physical activity, while playing a role in menstruation. Sharing responsibilities with the Spleen and Kidney, the Liver aids with urination and reproduction. The Liver Meridian (Figure 11.1) runs from the hallux medially up to the hip, and spiralling laterally to have 2 points on the ribs. The liver sends Qi to the head and eyes, and so it is believed that the health of the liver can be seen through the eyes. Amongst the symptoms of liver dysfunction are visual impairments, anger, headaches, irritability, and dizziness. According to Wakefield (2014) symptoms may also include lower back pain referring to scrotum, spasms in hands & feet, hernia, dry throat, infertility, bitter taste in mouth, urine retention and impotence.

The Deep Front Line (figure 11.2) is acting as the body's core. In contrast to the rest of the lines in Anatomy Trains, the Deep Front Line is more of a 3D structure rather than a line (figure 11.3), as it creates space between it's different branches. When describing the route the line passes through, it is important to note which part of the line it is, as the line creates a 3D structure and space. The line follows a 2D path from the plantar aspect of the toes and up to the Medial Femoral Epicondyle, from there the lines splits into anterior and posterior portions. From the anterior aspect the line then follows the Linea Aspera towards the Iliacus and Psoas Major, attached to the lumbar vertebral bodies, through the anterior diaphragm, sternum and into the Mandible. The posterior portion follows a path attaching with the Coccyx, lumbar vertebral bodies and up to the base of the Occiput. Between the two upper portions of the line, there is another division to form the middle portion which follows from the lumbar vertebral bodies through the posterior Diaphragm and into the Basilar portion of the Occiput.

While the line is more complex when compared with the rest of the lines described, it still shares a route with the meridian. On the lower portion of the line, it follows a similar path to that of the meridian, following the medial aspect of the leg.

The line's 3D properties provide a solid base for future testing regarding its part in the meridian's claimed effect. Due to the line containing the pelvic and reproductive organs, attachment to the lumbar spine, and throat, it is likely that treating it may have an effect on urine retention, fertility, throat related symptoms, lower back pain with referral to the scrotum and hernia. Further research should consider looking into the effects of treating the line in regards to those conditions to establish a base for TCM's claim of the Liver meridian.

4.1.12. The Kidney Meridian

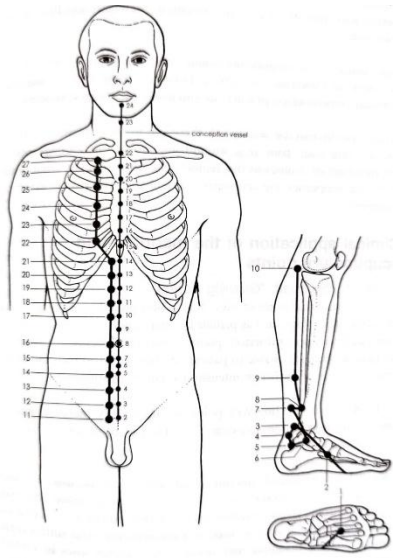


Figure 12

The Kidney (KI) Meridian (Figure 12) in TCM does not match any of the lines described in Anatomy Trains but contains parts of a few of them. The path the meridian follows begins at the foot, moving through the ankle and up to the spine. It is an important meridian, as the Kidney is the manufacturer of Qi. Different parts of the meridian can be attributed to different lines, giving it the importance TCM attributes to it. In TCM this meridian sends branches to the liver, lung, heart and pericardium, which matches with the meridian being part of a few lines, and not being limited to one. Future research can dive into the different parts of the meridian and compare the points on it with the relevant line to build a base of specificity between the meridian's different parts and the lines they follow.

4.2 Acupoints and the Nervous system

This comparison is based upon the data provided in the Dry Needling course on the Peripheral Nerve Stimulation portion, and will attempt at locating the given nerves in the course to their acupoints counterparts. All nerve are illustrated in figure 13 numerically, with their names in table 1. In this section, the main mechanics of the nerve and the point will be presented. The comparison will follow a path from superior to inferior. To avoid repetition, all data provided on acupoints, unless stated otherwise, is taken from Flaws (1997).

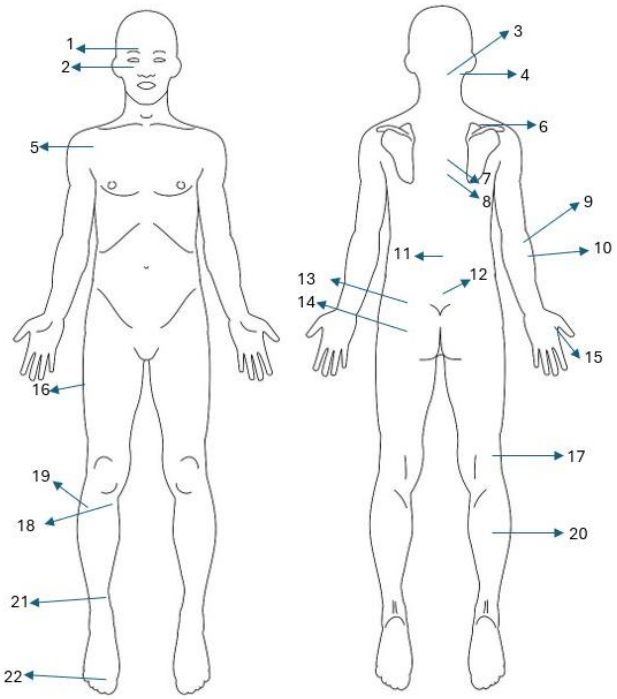


Figure 13

Nerve Number	Nerve Name	Nerve Number	Nerve Name	Nerve Number	Nerve Name
1	Supraorbital	10	Deep Radial	19	Common Fibular on Neck of Fibula
2	Infraorbital	11	L2 Cutaneous	20	Sural
3	Greater Occipital	12	L5 Cutaneous	21	Tibial
4	Greater Auricular	13	Superior Cluneal	22	Deep Fibular
5	Lateral Pectoral	14	Inferior Gluteal		
6	Suprascapular	15	Superficial Radial		
7	T6 Posterior Cutaneous	16	Lateral Femoral Cutaneous		
8	T7 Spinal Nerve	17	Common Fibular on Popliteal Fossa		
9	Lateral Antebrachial Cutaneous	18	Saphenous		

Table 1

Bilateral nervous stimulation is superior in its effects compared with a unilateral nervous stimulation (Chen et al., 2021). Needling bilaterally for stroke patients has been found to be more effective than needling unilaterally when inspecting brain activity (Yuan et al., 2025). Valentini et al. (2024) have found that bilateral acupuncture is more effective for blood circulation on peripheral artery disease and diabetic foot syndrome patients. Due to those, it is always advised to target both sides of the nerves when performing a Peripheral Nerve Stimulation Needling. This correlation between the two techniques has raised the question whether the points stimulated in DN are part of the TCM's acupoint system.

The Supraorbital (1) is located on the supraorbital ridge above the medial iris of the eye (Cuzalina and Holmes, 2004), and provides sensory innervation to the forehead, bridge of the nose and eyelids (Haładaj, Polguj and Topol, 2019). The TCM counterpart of that nerve is GB14 which is located above the eyebrow and is used to treat forehead pain, twitch of the eyelid and drooping of the eyelids. This range in TCM falls within the physiological agreed function of the nerve. While the nerve is not a motor nerve, if the signal sent to the brain indicates correct function, twitching and drooping may reduce.

Below the infraorbital rim, the Infraorbital (2) nerve is located, however it's exact location varies between people with changing distances from the rim (Ference et al., 2015). The Infraorbital nerve is providing sensory output to the skin of the cheek, eyelid, nose and upper lip (Rodella et al., 2012). Due to

the variety in the nerve's location, there are two optional acupoints to fit the location: ST1 and ST2. ST1 is located directly between the eye and the infraorbital ridge, while ST2 is located in the centre of the Infraorbital foramen, below ST1. Both points are attributed to brightening the eye, however, ST2 also contributes to opening of the nose, and facial paralysis. By their description and use, ST2 would be a better match for the Infraorbital nerve, as they both affect the nose and facial sensations.

At the back of the skull, below the Superior Nuchal Ridge, the Greater Occipital (3) nerve can be found (Waldman, 2007). It provides sensory innervation to the posterior scalp, posterior branches of the posterior cranial fossa and motor control to Multifidus Cervicis and Semispinalis Capitis (Germann and Kashyap, 2020). BL10 is located on the posterior hairline, just on the medial border of the Trapezius. BL10 is responsible for treating occipital pain and stiff neck. Both the nerve and acupoint have effect on occipital pain, and muscles on the neck.

Going laterally on the back of the head, just behind the earlobe and posterior to the border of SCM we can find the Greater Auricular (4). The nerve supplies sensory functions to the skin of the ear, the Mastoid process and the Parotid Gland (Swafiya Busaidy Salim, Amuti and Butt, 2023). Between the SCM and Trapezius, just below the Occiput, lies GB20. In TCM this point is used to treat common cold, dizziness, stiff neck, headache, eye diseases and tinnitus. The point and nerve do not seem to relate in their functions, though their locations align.

The Lateral Pectoral (5) can be found between the Pectoralis Major and Deltoid, as it makes its appearance from deep to superficial (R Shane Tubbs, 2015a, pp.547–551). The nerve supplies direct innervation to the Pectoralis Major, and indirect innervation to Pectoralis Minor though a merge with the Medical Pectoral nerve (Rea, 2015, pp.41–100). Lateral to Pectoralis Major, and superior to the Sternum, LU1 can be found. This point is used in TCM to treat chest pain, cough and asthma. While not directly relating, LU1 and the Lateral Pectoral both have an effect on the chest, meaning it is likely that the point refers to the nerve.

On the top of the Supraspinatus Fossa, we may find the Suprascapular nerve (6). This nerve innervates both the Supraspinatus and Infraspinatus muscles (Basta, Sanganeria and Varacallo, 2020). In TCM, SI12 is also located on the Supraspinatus Fossa, and is used to treat inflammation around the shoulder joint. Supraspinatus and Infraspinatus are both part of the shoulder rotator cuff, and in a paper by Fitzpatrick et al. (2022), the authors show that Supraspinatus is the most likely of the group to have calcific tendonitis, while both Supraspinatus and Infraspinatus are more likely to get tear injuries. Treating those muscles, can help reduce tension and injury in the shoulder, meaning that SI12 is located perfectly for that according to anatomy and its relation to the Suprascapular nerve.

As their names foreshadow, T6 Posterior Cutaneous (7) and T7 Spinal Nerve (8) are located on the T6-T7 and T7-T8 junctions respectively. According to the Sheperd Center T6 – T8 nerves assist with deeper breathing by controlling the diaphragm and upper abdominal muscles. Due to these nerves acting as part of a group, they will be discussed simultaneously. BL16 and BL17 are located just under the inferior body of the vertebrae T6 and T7 respectively. BL16 is used to treat heart pain, skin disorders and abdominal distention, while BL17 is used to treat shortness of breath. As the heart is located above the diaphragm, and the diaphragm is a muscle used for breathing, the use of BL16and BL17 for those reasons aligns with the nerves function.

Emerging laterally to the Biceps Brachii insertion, the Lateral Antebrachial Cutaneous (9) is found (Qawasmi et al., 2024). This nerve provides sensory feed to the lateral aspect of the forearm (Wongkerdsook et al., 2010). Located on the lateral end of the cubital crease while the elbow is flexed is the point LI11. This point is used to treat local pathologies, paralysis of upper arm, hypertension and fever.

Just 2 cun distally to it, LI10 is located and is used to treat Lateral Epicondylitis, soreness & pain in the local area. Emerging from the Supinator muscle, the Deep Radial (10) can be found. It is a motor part of the Radial nerve, providing innervation to Supinator and Extensor Carpi Radialis Brevis (Glover and Murphy, 2019). While LI11 and LI10 share the same locations as the nerves, they are used to treat different functions than those provided by the nerves. The only exception is LI10 is used for Lateral Epicondylitis, and the Deep Radial nerve supplies an extensor of the forearm, that could be causing the pathology (Heales et al., 2016).

Between L2 and L3 vertebrae, we can find L2 Cutaneous (11), providing sensory innervation to the lower back and top of the anterior thigh (Sobotta, Staubesand and Taylor, 1990a, pp. 362). In TCM, BL23 is located on just below the spinous process of L2. This point is used to treat impotence, menstrual irregularities, diarrhea, lumbar pain, tinnitus and deafness. While the point and the nerve are located in the same location, their function of treatment do not seem to cross.

L5 Cutaneous (12), originating between L5-S1 vertebrae, provides motor control to Tibialis Anterior, Extensor Hallucis Longus, Extensor Digitorum Brevis and lateral head of the Gastrocnemius (Young et al., 1983). BL26 also located on the nerve emergence is used to treat diarrhea and lumbar pain. The points, while sharing the same location for treatment, do not share the same outcome.

Passing inferior to the Piriformis muscle, run the Inferior Gluteal (14) nerve. This nerve provides motor control to the Gluteus Maximus (Merryman, Edinen Asuka and Varacallo, 2022). The Piriformis muscle originates from the 1st to 4th anterior sacral foramina and attaches to the Superior border of the Greater Trochanter (Sobotta, Staubesand and Taylor, 1990b, pp. 307). In TCM, 3 cun lateral to the lower border of the spinous process of S4, BL54 is located. This point is used to treat lumbar pain, sciatica and lower extremity paralysis. The point and nerve share a proximal location. Both points also play a role with lumbar pain, as Gluteus Maximus plays an important role in the treatment of lower back pain (Shaban et al., 2025).

Crossing the anatomical snuffbox, the Superficial Radial (15) emerges, and provides sensory feed to the dorsal aspect of the of the hand and lateral 3.5 fingers (Glover and Murphy, 2019). The nerve is found very close to the base of the thumb (Z. Asli Aktan Ikiz and Hülya Üçerler, 2004). Between the 1st and 2nd metacarpal, we can find the spot LI4. It is used to treat headaches, toothaches, swollen eyes, sore throat, numbness in fingers and upper arm and fever. It is noteworthy that this point is contraindicated during pregnancy. The nerve and the point only share the numbness sensation to the fingers as a common treatment.

Running through the Iliotibial band, the Lateral Femoral Cutaneous (16) nerve is providing sensory innervation to the anterolateral and lateral thigh (Swezey and Bordoni, 2021). GB31 is located on the lateral side of the thigh, 7 cun above the popliteal fossa and is used to treat paralysis of the lower leg. While sharing anatomic placement, these points do not share the same treatment outcomes.

Common Fibular nerve has 2 access points when it comes to treatments, one of those points can be found on the Popliteal Fossa (17) medial to the Biceps Femoris and the other on the Neck of the Fibula (19) (Apaydin, 2015). The Common Fibularis provides motor innervation responsible for dorsiflexion and eversion of the foot, while also providing sensory feedback to the lower leg (Hardin and Devendra, 2020). BL39, located on the popliteal fossa, and medial to biceps femoris, and is used to treat spasms of gastrocnemius, lumbar pain, and urinary urgency. BL36 located 3 cun under the lateral aspect of the patellar ligament, on the anterior high point of the tibia bone. This point is used to treat gastric pain, vomiting, diarrhea and gastrointestinal issues. While the nerve shares an anatomical location with the

points, except for BL39 that is used to treat gastrocnemius spasms, there is no correlation between the nerve and the TCM points.

Running along the medial side of the Tibia we can find the Saphenous (18) which is providing sensory innervation to the medial aspect of the lower leg up until the 1st Metatarsophalangeal joint (Craig, 2015). Located on the inferior border of the medial epicondyle of the Tibia we can find the SP9 point, used to treat abdominal distention, oedema, knee pain, menstrual irregularities and seminal emission. There is no correlation between the nerve and the point.

The Sural (20) nerve runs between the heads of the Gastrocnemius and becomes more superficial around the midpoint of the calf region (Miniato and Nedeff, 2021) and supplies sensory innervation to the lateral border of the foot (Jacob, 2008). At the separation of the Gastrocnemius, lies the points BL57. This point is used to treat sciatica, heel pain, prolapsed rectum, and paralysis of the lower extremity. The nerve and point share a similar anatomical placement, and do share some of the same treatment reasoning, as both are used to treat pain in the heel.

Running just posteriorly to the medial malleolus we can locate the Tibial (21) nerve. The nerve is starting more superior, and provides motor control to produce hip extension, knee flexion and internal rotation, ankle plantar flexion and inversion, hallux abduction and adduction, while also acting as a synergist for toes flexion and extension. From the sensory point, it innervates the heel and the foot (Desai and Cohen-Levy, 2019). Just superior to the lateral malleolus and posterior to the tibia we can locate SP6. This point is used in the treatment of genitourinary and digestive related issues. The nerve, whilst sharing a position with the point does not share the same treatment outcomes.

Palpating in the 1st interosseous space we can feel the Deep Fibular (22), which provides sensory innervation to the dorsum of the foot (Garrett and Geiger, 2021). Located in the space between the 1st and 2nd metatarsals lies LV3. This point is used to treat headaches, deviation of the mouth, vertigo, and epilepsy. The point is used for a variety of pathologies that do not relate to the nerve's function.

The Superior Cluneal (13) is the exception of all the nerves covered in the paper. After piercing the inferior part of the Latissimus Dorsi, the nerve crosses posteriorly to the Iliac Crest. This nerve's location does not fit any of the mentioned points found in the books we have checked, which makes this nerve and needling point unique to DN.

5. Discussion

The aims of this review were to investigate for a connection between TCM and current scientific knowledge, and those were divided into 2 different lenses, first was the comparison between the meridian system of TCM and the Anatomy Trains model by Myers. Through that comparison, we have been able to connect some of the meridians with their respective lines, following the same path across the body. During the comparison we were unable to connect the Kidney meridian to any known line in the Anatomy Trains model, however, the rest of the 11 meridians were matched with a line, and inspected thoroughly to try and find links between the 2 disciplines. 2/11 meridians have been found to have research supporting their effect on the patient in modern research, 8/11 have shown potential and require further research to prove or disprove the claims. 5/11 showed no relation to the claims while inspecting the line, however, research can inspect relations between seemingly non-related parts of the body. This paper opens a space for speculations and could be used for future research following the treatment of the line in order to test for TCM reactions of the respective meridian.

The second objective compared between nerves taught in the DN course, and their respective acupoint, if exists. 21/22 nerves have been matched with an acupoint. 12/21 nerves shared a function with their corresponding acupoints. 9/21 did not share a function between themselves. It is important to note, and put it up for discussion, that while the innervation of the nerve in anatomical terms may be very specific, allowing it to innervate at its reach, it does not necessarily mean that stimulating it does not have a different effect on the nervous system as a whole. It is possible that while the nerve acts as a motor or sensory innervator, the effects it may have on the nervous system vary and may not be limited to just the nerve endings. Future research should look at some of those reactions and claims from TCM while understanding the nerve location relating to the point. This paper only concentrated on 22 nerves in clinical practice, and this does not mean there are no more acupoint - nerve relations.

Qi was not part of the scope of this paper, however, the relation found between meridians to anatomy trains lines and acupoints and known nerve locations may open a channel towards investigating qi as part of a larger effect happening throughout the body. Both the methods used to control qi in TCM have some bases in western medicine, that could indicate qi may be applicable and finally analysed through function rather than translation of the word.

We hope that this paper will open more research disciplines in the study of TCM and modern medicine, bringing scientific curiosity with open discussion surrounding TCM. This could be a cornerstone for the development of better integration between western and eastern medicine, allowing more treatments to be seen as conventional rather than hoax, while also limiting the use of irrelevant practices, or unbacked claims.

6. Conclusion

TCM is an old discipline in the medicinal field, and has shown to find anatomical structures years before its time.

Inspecting the meridians, TCM has lined out, almost perfectly, the Anatomy Trains lines found thousands of years later. This paper highlights the lines and meridians that cross the same path, and narrows down functions that are shared between the two.

Looking at the acupoints, this paper confirms that some of those points are located on known anatomical landmarks, that can provide remedies to different pathologies.

While there is no simple answer, as both aims have been showing both positive and negative comparison outcomes, we can say in confidence that there are truths within TCM. We have found sources from the western academic world supporting the findings of TCM. While further research is required, TCM, on its different disciplines, can provide help to the public on varying conditions.

7. References

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