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Superficial back line anatomy trains

Previous page Next page Myofascial Meridians for manual and motion therapists Search Pocayo:: Main surface back line MYOFASCIAL meridian. PERMISSION FROM JOSEPH E. MUSCOLINO. KINESIOLOGY – SKELETAL SYSTEM AND MUSCLE FUNCTION, 3. MODELED FROM TOM MYERS' ANATOMY TRAINS ART. Anatomy Trains Myofascial Meridians concept Tom Myers is very popular among manual and motion therapists. Until recently, however, there was little scientific evidence to support this concept. Jan Wilke and researchers from Goethe University in Frankfurt am Main, Germany, looked for evidence of the existence of six myofascial meridians, as suggested by Tom Myers in 1997. Metastudy The researchers in this metastudy (metastudy is a study that examines the body of previous studies) looked for relevant articles on human anatomical autopsy published between 1900 and December 2014 in scientific publication databases. The authors evaluated peer-reviewed anatomical autopsy studies that reported morphological continuity between muscle components of myofascial meridians. Documents on the general anatomy of the relevant area of the body were also searched. Continuity between the two muscles was only documented if two independent investigators agreed it had been clearly reported. Two independent investigators also evaluated the methodological quality of the studies involved. The review identified 6589 articles. Of these, only 62 met the inclusion criteria. Did you know that Digital COMT (Digital Clinical Orthopedic Manual Therapy), Dr. Joe Muscolino's video streaming subscription service for manual and movement therapists, has six components with video lessons on manual therapy treatment, including the entire component of stretching, as well as an ingredient on Pathomechanics, another on anatomy, and many more? Digital COMT adds seven new video lessons each week. And nothing ever disappears! Click here for more information. Results - Strong evidence found back and frontline myofascial meridians. PERMISSION FROM JOSEPH E. MUSCOLINO. KINESIOLOGY – SKELETAL SYSTEM AND MUSCLE FUNCTION, 3. MODELED FROM TOM MYERS' ANATOMY TRAINS ART. The review suggests strong evidence of the existence of three myofascial meridians: superficial Back Line (all three transitions verified, based on 14 studies), Back Functional Line (all three transitions verified, eight studies) and Front Functional Line (both transitions verified, six studies). Results – Moderate to strong evidence Found Moderate to strong evidence is available for parts of the spiral line (five out of nine validated transitions, 21 studies) and lateral line (two out of five validated transitions, ten studies). SPIRAL LINE MYOFASCIAL MERIDIAN. JOSEPH MUSCOLINO. KINESIOLOGY – SKELETAL SYSTEM AND MUSCLE FUNCTION, 3. MODELED FROM WORKS OF ART IN ANATOMY TRAINS TOM MYERS. For the Spiral Line, continuity was found between the rhomboids and the serratus anterior, serratus anterior and external abdominal oblique and external abdominal oblique and internal abdominal oblique. However, no continuity was found under the pelvis. SIDE LINE MYOFASCIAL MERIDIAN. PERMISSION FROM JOSEPH MUSCOLINO. KINESIOLOGY – SKELETAL SYSTEM AND MUSCLE FUNCTION, 3. MODELED FROM WORKS OF ART IN ANATOMY TRAINS TOM MYERS. For the lateral line, only continuity of the iliotibial tract and gluteus maximus/tensor fasciae latae and gluteus maximus/tensor fasciae latae and abdominal oblique were found. Another great article for you! Deep pressure massage at low back – client and therapist placement results – No evidence found There is no evidence for superficial Front Line (no verified transition, seven studies). There is no reported structural link between rectus femoris muscle and rectus abdominis. Also, sternalis, which is suggested to be a crayb sequel to rectus abdominis, exists in only a small percentage of the population. Even if it is present, the fuse does not comply with rectus abdominis. Comment by Joseph Muscolino I recently published another metastudy review of myofascial meridians. While there was certainly some consistency between the two studies, it is interesting to see how one study compared to another may differ. In general, different results in studies on the same subject may point not only to inconsistencies that may arise from how one study is conducted to another, but also to how the metastudy may differ from another metastudy based on how previous studies are assessed (inclusion criteria, etc.). And there is always some subjective judgment both at the conclusion of one study, as well as the way the studies are reviewed in the metadata. In the specific case of these two studies, both were conducted by the same group of researchers. The first study looked at continuity in myofascial meridians, while the second focused on power transfer. What's interesting here is that there can't be a transfer of power if there's no continuity, right? Thus, evidence of the transfer of power can be appropriately extrapolated as evidence of continuity (and vice versa). I'll also add something I've added to a previous metastudy blog post article. This means that the functional lines of myofascial meridians are considered 'functional' in that their voltage transfer is evident only when the body is functionally in certain positions that are not likely to be the positions in which the corpses are studied (they are more likely to be in a position that is close to the anatomical position). Certainly in order for this functional continuity to be present in a particular position, there should also be some continuity in the anatomical position. However, continuity is likely to be much less apparent when the corpse/body is in an anatomical position and is therefore much less likely to be present. THE TERM MYOFASCIAL MERIDIAN, ALSO KNOWN AS MYOFASCIAL CONTINUITY, MYOFASCIAL CHAIN, OR ANATOMY TRAIN. PERMISSION FROM JOSEPH E. MUSCOLINO. KINESIOLOGY – SKELETAL SYSTEM AND MUSCLE FUNCTION, 3. Conclusion The authors suggested that the practical significance is twofold. First, the existence of myofascial meridians could help explain the phenomenon of that pain. For example, myofascial trigger points in the calf have been shown to induce pain that radiates into the foot and hind thigh. The second aspect concerns the treatment and training of the suculoskeletal system. Treatment with myofascial meridians could be effective in reducing back pain. Several studies have shown that patients with lower back pain show reduced flexibility of hamstrings. Overload of injuries in competitive sports is another body of pathologies that can occur due to the presence of myofascial meridians. Recent studies suggest that tightness of gastrocnemius and hamstrings are associated with plantar fasciitis. Groin pain or athletic pubalgia is suggested to be induced by tight adductor longus and weak rectus abdominis. The transfer of the strain along the meridians would open a new frontier for understanding the pain and provide justification for developing more technological treatment approaches. This blog post article was created in collaboration with www.terrarosa.com.au. (Click here to blog post the article Increased Muscle Activation in the Back Line of Myofascial Continuity.) Did you know that Digital COMT (Digital Clinical Orthopedic Manual Therapy), Dr. Joe Muscolino's video streaming subscription service for manual and movement therapists, has six components with video lessons on manual therapy treatment, including the entire component of stretching, as well as an ingredient on Pathomechanics, another on anatomy, and many more? Digital COMT adds seven new video lessons each week. And nothing ever disappears! Click here for more information. This first line, the superficial backline (SBL) (Fig. 3.1), is presented in considerable detail to clarify some general and specific concepts of Anatomy Trains. The following chapters use the terminology and format developed in this chapter. Whatever line you are interested in, it can help you read this chapter first. The superficial Back Line (SBL) connects and protects the entire posterior surface of the body like a carapage from the bottom of the foot to the top of the head in two pieces - the tips on the knees, and the knees on the eyebrows (Fig. 3.1). When the knees are elongated, as well as standing, the SBL acts as one continuous line of integrated myofascie. SBL can be circulated as unity, seen here as on its own and laid over plastic classroom skeleton (Figs 3.3 and 3.4). Table 3.1 Superficial back line: myofascial tracks and bony stations (Fig. 3.2) Bony station Myofascial traces Frontbone, supraorbital crest 13 12 Galea aponeurotica/epicranial fascia Occipital crest 11 10 Sacrolumbar fascia/spinae sacrum 9 8 Sacrotuberous ligament Ischial tuberosity 7 6 Hamstring Con femur dyls 5 4 Gastrocnemius/Achilles tendon Calcaneus 3 2 Plantar fascia and short toe flexors Plantar surface toe phalandes 1 Total postural function of SBL is to support the body in full upright extension, to avoid the tendency to twist into flexion illustrated by the position of the fetus. This throughout the day postural function requires a higher proportion of slow twitch, endurance muscle fibers in the muscular parts of this myofascial band. Constant postural demand also requires extra-heavy leaves and bands in the fascial part, as well as in the Achilles tendon, hamstrings, sacrotuberous ligament, thoracolumbar fascia, 'cables' of the erect spine, and on the occipital ridge. The exception to the expansion function comes to the knees, which, unlike other joints bent backwards by the muscles of the SBL. Standing, interconnected tendons of the SBL assist the cruciate ligaments in maintaining postural alignment between the tibia and femur. With the exception of knee-to-knee flexion, the overall movement function of SBL is to create expansion and hyperextension. In human development, the muscles of the SBL lift the baby's head out of embryological flexion, with progressive engagement and 'reach out' through the eyes, supported by the SBL down through the rest of the body to the ground – abdomen, seat, knees, legs – as the child achieves stability at each developmental stage leading to an upright stall about one year after birth (Fig. 3.5). Since we were born in a bent position, with our focus very much inward, the development of strength, competence and balance in the SBL is closely associated with a slow wave of maturity as we move from this primary flexion to a full and easily maintained extension. The author of Psalm 121, who wrote : I will lift my eyes up the hills since my help comes, it is allowed to do so by the superficial Back Line. NOTE: We begin with most major 'cardinal' lines (those lines on the front, back and side) at their distal or causal ends. It's just a convention; we could have worked so easily out of our heads. The body will often create and distribute tension in both directions, or In the middle will work its way out at both ends. No causal link is indicated in our choice of where to start. The most general statement that can be made about any of these anatomy lines trains is that tension, tension (good and bad) trauma, and movement tend to be passed through the structure along these fascinating lines of transmission. The SBL is the cardinal line primarily afflicting posture and movement in the sagittal plane, either restricting forward movement (flexion) or, when broken, exaggerating or maintaining excessive rearward movement (expansion). Although we are talking about the SBL in the singular, there are, of course, two SBL, one on the right and one on the left, and the imbalance between the two SBL should be respected and corrected together with the solution of bilateral models of restrictions in this line. Common models of postural compensation associated with SBL include: restriction of dorsiflexion of the ankles, knee hyperextension, hamstring shortness (replacement for insufficient deep lateral rotators), anterior pelvic change, sacral nuisness, lordosis, extensor expansion of thoratic flexion, suboccipital restraints leading to upper cervical hyperextension, anterior displacement or rotation of the occiput on the atlas, and eye-movement of the spine disconnection. Our original 'station' on this long line of myofascia is the underside of distal phalannation on the flows. The first 'track' runs along under the surface of the foot. It includes the plantar fascia and tendons and muscles of the short toe flexory coming from the foot. These five bands blend into one aponeurosis that runs into the front of the heel bone (the anterior-inferior aspect of the calcaneus). Plantar fascia highlights another and important 6. These fascias, and their related muscles that stretch through the bottom of the foot, form adjustable 'bowstring' on the longitudinal leg arches; this bow tie helps to approximate the two ends, thereby maintaining the heel and 1. Plantar aponeurosis represents only one of these bow ties – the long plantar ligament and spring ligament also provide shorter and stronger bow ties deeper (more cephalopods) into the tarsa of the foot (visible under the subtalar joint in Figure 3.9, see also Fig. 3.34). The plantar surface of the foot is often the source of problems that communicates through the rest of the line. The restriction here often correlates with tight hamstrings, lumbar lordosis, and resistant hyperextension in the upper cervix. Although structural work with the plantar surface often involves many joints and quite hefty stretching of this dense fascia, any method that assists in loosening will communicate tissues above (DVD ref: Superficial Back Line, 10:57-16:34). If your hands are not up to the task, consider using the 'ball under foot' technique described below in the 'simple test'. Compare the internal and external aspect of your client's legs. While the outer part of the foot (the base of the small finger to the heel) is always shorter than the internal aspect (from the base of the large finger to the heel), there is a common balanced proportion. If the inner aspect of the foot is relatively short, the foot will often be slightly lifted from the medial surface (as if supinated or inverted) and seemingly curved toward the stick in a 'cupped hand' pattern, as if a slightly cupped hand had placed the palm down on the table. In these cases, it is the medial edge of the plantar fascia that needs opening. The plantar surface of the foot is often the source of problems that communicates through the foot. If the external aspect of the foot is short - if the small finger is retracted or 5. This pattern often accompanies a weak inner arch and dumping weight on the inside of the foot, but can occur without a fallen arch. Even in relatively balanced feet, the plantar surface can usually benefit from reviving work to make it more flexible and communicative, especially in our urbanized culture, where feet stay locked in leather coffins throughout the day. The default approach to plantar tissue is to lengthen between each of the points that support the arches: the heel, the first metatarsal head, and the 5th metatarsal head (Fig. 3.8). For the sometimes dramatic and easily administered affinity test of the entire SBL, allow your client to make a forward bend as if to touch toes with his knees straight (Fig. 3.10). Note the bilateral contour of the back and resting position of the hands. Tell your client how it feels on the back of the body on each side. Have your client go back to standing and roll a tennis ball (or golf ball for hardy) deep into the plantar fascia on one leg only, being slow and thorough with pressure rather than fast and energetic. Keep it for at least a few minutes, making sure the entire territory is covered from the ball all five toes back to the front edge of the heel, the whole triangle is shown in Figure 3.8. Now the client will do a forward bend again and note the bilateral differences in the rear contour and distance of each hand from the floor (and alert the client to the difference in feeling). For most people, this will produce dramatic demonstrations of how working in one small part can affect the functioning of a whole. will work for many people, but not for all: for the most easy to evaluate results, avoid doing so with severe scoliosis or other bilateral asymmetries. Since it also works as a treatment, be sure to perform the same procedure on the other side after both assess any difference. It is 'common knowledge' that muscles attach to bones - but this common sense opinion is simply not the case with most myofasciae. Plantar fascia is a good case in point. People who run on balls of foot, for example, or others who, for some reason, put repetitive pressure on the plantar fascia, tug constantly on the calcaneal attachment of the plantar fascia. Since the fascia is not really attached to the calcaneus, but rather blends into its periosteal 'plastic wrap' cover, it is possible in some cases for the periosteum to be gradually pulled away from the calcaneus, creating space, a kind of 'tent', between this fabric and the bone (Fig. 3.11). Among the majority of periosteum and their related bones lie many osteoblasts – bone-building cells. These cells are constantly cleaning and rebuilding the outer surface of the bone. In both the original creation and the continued maintenance of their related bones, the osteoblasts are programmed with a simple commandment: You will fill the bag of periosteum. Clients who create recurrent tension in the plantar fascia are likely to create plantar fascitis anywhere along the plantar surface where tears and cheers. If instead the periosteum calcaneus subsides and leaves the bone, then the osteoblasts fill the 'tent' under the periosteum, creating bone spurs. The stimulus itself and the incitement of the process are natural and not inherently painful; pain comes when the stimulus interferes with the sensory nerve, as heel spurs often do. As shown in Chapter 2, fascias do not just attach to the heel bone and stop (as shown in Figure 3.11). They actually attach to the collage cover of kalcaneus, the periostea that surrounds the bone like a hard plastic wrapper. If we start thinking this way, we can see that the plantar fascia is so continuous with nothing else that attaches to this periosteum. If we follow the periosteum around the calcaneus, especially under it around the heel to the posterior surface (after a dense and continuous band of fascia – see Figs 3.12 and 3.15B), we find ourselves at the beginning of the next long stretch of track, which begins with the Achilles tendon (Figs 3.12 and 3.13). Since the Achilles tendon must withstand so much tension, it is connected not only to the periosteum, but also to the collagen network of the heel bone itself, just as the tree is rooted into the ground. Leaving the calcaneus and its periosteum, our train passes up, getting wider and flatter as it goes (Fig. 3.12). Three structures feed on the Achilles tendon: saltus from the deep side, gastrocnemius from the surface side and a small plantaris in the middle. Consider this first connection we made – from the plantar fascia around the heel to the Achilles tendon – as an example of the unique clinical implications that come from myofascial continuity. Simply put, the heel is the patella ankle, as we can see in the x-ray of the foot (Fig. 3.14). In terms of tension, the calcaneus is a compression strut that pushes the SBL tensile tissues from the ankle to form the correct tone around the back of the fulcrum tibio-talc, with soft tissue from the knee to the knees. (Contrast this effect with the closeness of the joint-stabilizing muscles: the fibularii (peroneals) of the lateral line that snake directly around the lateral malleolus. Similarly, long toe flexors from the Deep Front Line go close behind the media malleolus, lending them a greater stabilization advantage but less leverage for jumping.) To see the clinical problem this pattern can create, imagine this lower part of this superficial back fascial line - the plantar fascia and the Achilles-linked fascia - as bowstring, with a heel like an arrow (Fig. 3.15). Since the SBL chronically over-tightens (common in those with a pervasive postural defect forward slender legs: an ante displacement of the pelvis), it is able to push the heel forward into the subtalary joint; or in another common pattern, such extra tension can bring the tibia-fibula complex posteriorly to the talus, representing the same thing. To assess this, look at your client's leg from the lateral aspect as it stands, and drop the imaginary vertical line down from the bottom edge of the side malleolus (or, if you like, place your index finger vertically down from the tip of the malleolus to the floor). See how many of the legs lie in front of this line and how much is behind. Anatomy dictates that there will be more legs in front of the line, but with a little practice, you will be able to recognize the normal proportion (Fig. 3.16A) versus the relatively small heel behind that line (Fig. 3.16B). Measure forward from the place below the side malleolus to 5. Measure back from place to where the heel leaves the floor (limit its support). On a purely empirical clinical basis, this author finds that a proportion of 1:3 or 1:4 between the hind legs and front legs offers effective support. A ratio of 1:5 or more indicates the minimum support for the back of the body. This pattern can not only result in tightness in the SBL, but also cause more tightness as well, as it is often accompanied by moving forward on the knees or place more weight on the front foot, which only tightens the SBL further. As long as this pattern remains, it will prevent the client from feeling safe as you try to balance the hips over the legs. For those who say that this proportion is determined by hereditous, or that it is not possible for the calcaneus to shift significantly forward or backward in the joint, we recommend that you try the following: In more light-moving cases, it may be necessary to further relax the ligaments of the ankle by working deeply but slowly from the corner of each conical joint (avoiding nerves) diagonally into the postero-lower corner of the heel bone. The result will be a small but visible change in the amount of foot behind the malleolar line, and a very tangible change in support of the back of the body in the client. Therefore, strategically, this work should pre-existing any work to help with the front of the pelvic change. Please note that the mark of success is a visibly increased amount of heel when reconsidering using malleolus as your guide. Repetition may be prompted until the forward tilt in the client's stance is resolved by your other efforts (e.g. freeing the distal ends of the hamstrings, lifting the rectus femoris of the superficial frontline, etc.). Two large muscles bind to the Achilles tape: deep soleus and gastrocnemius from the superficial side (Fig. 3.15a). The connection of the SBL is with the superficial muscle, gastrocnemius. Firstly, however, we have a timely opportunity to demonstrate another concept of Anatomy Trains, and that is what the locals are expressing. The importance of distinguishing expressions and local people lies in this postural position, which is most often held in the basic local population, not in more superficial expressions. Myofascie express trains cross more than one connection; locals cross, and therefore act further, just one common. With some exceptions in the forearm and lower leg, locals are usually deeper in the body – deeper – than expressed. (See section Ch. 2 for a full definition and examples) However, this superficial posterior part of the lower limb is not one of the following exceptions: two heads of gastrocnemius pass through both the ankle and knee joints and can act on both. The deeper soleus passes only the ankle joint – passing from the heel to the posterior aspects of the tibia, the interosseous membrane and the fibula – and acts only on that joint. (The so-called ankle joint is really two joints, consisting of a tibio-talar joint that acts in plantar- and dorsiflexion, and a subtalary joint that acts in what we call inversion and everzie. Although triceps surae - plantaris, gastrocnemius and soleus combined - has some effect on the subtalar joint, we will ignore that effect for now, appointing soleus one-joint muscle for the purposes of this example.) we took soleus locally, we could continue in the same fascial plane and come to the fascia on the back of the popliteus, which passes through the knee and bends it (and also rotates the tibia medial on the femur when the knee is bent, even if it is out of our current discussion). Gastrocnemius express can thus participate in plantarflexion and knee flexion, while each of the two locals provides only one event. We will see this phenomenon repeated throughout myofascial meridians. After the SBL over gastrocnemius, we are coming to the first of many turns in the rules of Anatomy Trains, which we will call a 'derailment'. Derailments are exceptions to the rules of Anatomy Trains, which can be explained in terms of usefulness for soft tissue and physical work. During the derailment, Anatomy Trains still operate, but only under certain conditions. In order to understand this first important exception, we need to take a closer look at the interface between the two heads of gastrocnemius and the tendons of three hamstrings (Fig. 3.17). From comparison with Figure 3.17, it is easy to see that gastrocnemius and hamstrings are separated and interconnected. In the autopsy, the powerful areolar fascia clearly links from near the distal ends of the hamstrings to near the proximal ends of the gastrocnemii head. Figure 3.17 had this tissue exposed; figure 3.3 has been retained. Such areolar tissue, long considered simply passive stuffing, has now proved to be an effective transmitter of strength when tightening.1 In practice, flexion of the knees disconnects from one another. While the strict rules of Anatomy Trains are myofascial continuity, they function as one primarily when extending the knee. Gastrocnemii heads reach up and around the hamstring tendon inserted into the upper thigh condyles. Hamstrings reach down and around gastrocnemii attach to the tibia and calf. As long as the knee is bent, these two myofascial units go their own way, adjacent but loosely attached (Fig. 3.18A). As the knee joint comes into elongation, however, the femur condyles return to the tightening tendon complex, engaging these elements with each other, and making them function together almost as if two pairs of hands were grasped on the wrist (Fig. 3.18B-D). This configuration also bears a strong resemblance to the square knot, loosened when the knee is bent, tightened as the knee straightens. Straightens.

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