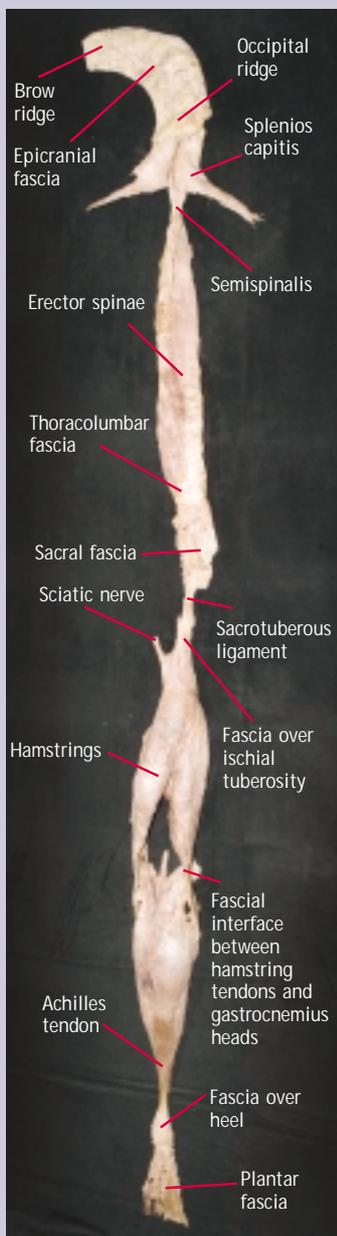


# ANATOMY TRAINS - EARLY DISSECTIVE EVIDENCE

By Tom Myers, soft tissue practitioner

## Figure 1: Superficial back line

Here we see the fascial 'grain' on the back side of the body - from the toes to the brow ridge in one continual band of fascia. You can see the plantar fascia at the bottom, and how it is utterly continuous with the fascial covering traversing around the heel to the Achilles tendon. You can see how the lower tendons of the hamstring intertwine fascially with the upper tendons of the gastrocnemii, forming a 'square knot'.



The short head of the biceps and sciatic nerve were folded out to be easily identified, and you can see how the hamstrings lead seamlessly into the sacrotuberous ligament (the superficial part at least).

The sacral fascia and erector spinae had to be cut away from the underlying bones, but there was no difficulty in dissecting out the connection between these muscles and the epicranial fascia to the brow ridge above the eye.

This long fascial piece may have individual muscles within it, but it also acts as a single unit, conveying the tension or strain in one part down or up to another, contributing to an overall feel, shape, and pattern to this Superficial Back Line.

Some readers may be familiar with the Anatomy Trains Myofascial Meridians idea. Briefly, all our muscles have been analysed as if they were separate units within the body. This idea - that there is a separate unit like the biceps, the psoas, the latissimus - is so pervasive, that it is hard to think in any other way. But in fact all the muscle tissue is embedded within the single, ubiquitous fascial webbing of the extracellular matrix (ECM). The fibres of the ECM, especially within the myofascia where tensile pulls are regular and strong, are arranged along the same 'grain' as the muscle fibers. The muscle may end at the attachment point, but the fascia continues along its way through the ECM, linking up to other muscles in chains - a bit like a set of sausage links. The Anatomy Trains concept maps out these sets of sausage links within the body - following the grain of muscle and fascia to see what links with what. The idea is that, especially in postural habitus and long-term sequelae from injury, strain communicates along these longitudinal lines from one muscle to another. This view leads to new strategies for resolving long-term problems by working on the strain pattern at some distance from the site of injury or pain.

Since the Anatomy Trains book was published, some people have asked whether the body really demonstrates the fascial connection theorised in the book. I am therefore excited to present for the first time, a few of the photos from a recent dissection in which we attempted to dissect portions of myofascial continuity from three preserved cadavers. The results were startling in their novelty and reassuring in how they confirmed most of what the book presents. In February 2006, we went to the Laboratories for Anatomical Enlightenment, under the direction of Todd Garcia, along with several of his assistants and about a dozen bodywork practitioners. Over 5 days of feverish activity and cooperative work, we transformed the gift of the three bodies - we thank the donors so very much - into a set of anatomical images not seen in 500 years of Western anatomical study. These images and more will be appearing in the second edition of the Anatomy Trains book, due out in 2008.

So, welcome to the first documentary evidence of the 'anatomy of connection'. These are just a few of the many striking figures we took of the Anatomy Trains lines; many more will appear in the future editions of the book, and some more are available on our website.

The question: Are there really these myofascial continuities in the body? This can now be answered firmly in the affirmative: Yes, they are real, and palpable and dissectable. The reality of the Anatomy Trains is now proven.

There is a second question that cannot be answered in an embalmed cadaver, which is: What is the nature and extent of communication along these lines? Are they communicating biome-

# MYOFACIAL LINKS

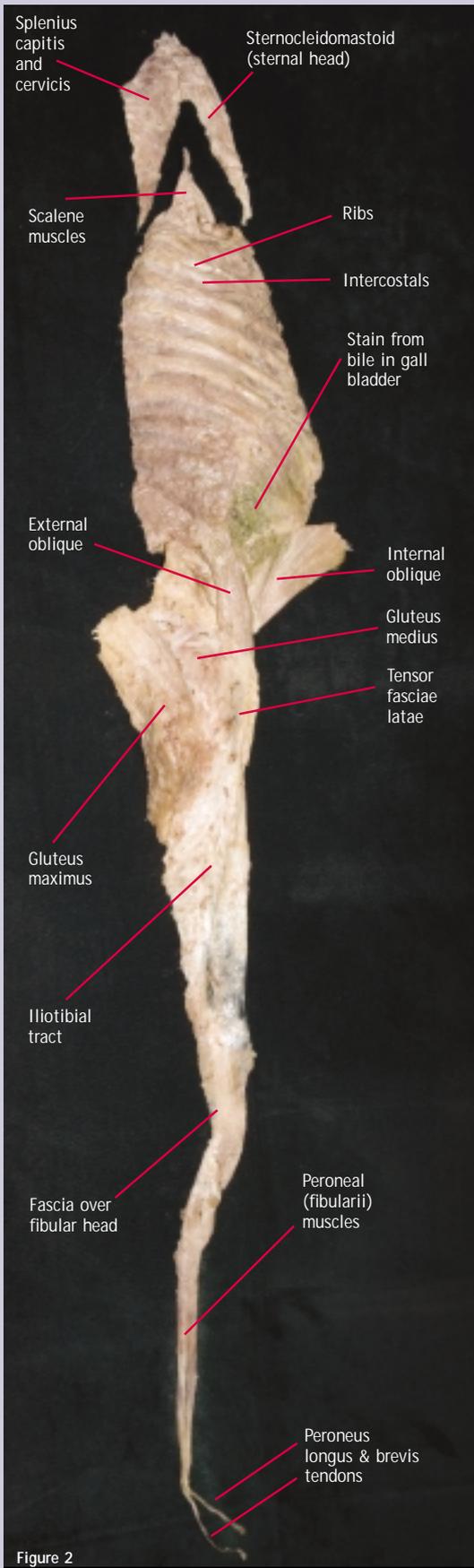


Figure 2

## Figure 2: Lateral line

In this photograph, we see the lateral line - starting with the two peroneals (now called fibularii) at the bottom, connected fascially over the fibular head to the iliotibial tract. It was no surprise to connect this into the gluteals and tensor fasciae latae, but it was a complete surprise how easy it was to connect these gluteal fasciae with all the abdominal layers, including, as you see here, the external and internal oblique. The ribs were clipped to continue the line up the side via the external and internal intercostals.

At the top of the ribs, you see the small triangle of the scalenes, not technically part of this line, but included nevertheless because of their clear fascial continuity. At the top of the picture, you see the chevron combining the splenii in the back with the sternal head of the sternocleidomastoid (SCM) in front. This part is separate in this picture only because these are both muscle that originate on the sagittal midline, and the rest of the Lateral line is more to the side.

## Figure 3: Lateral line on skeleton

Here is this dissection laid out on a classroom skeleton, arranged as if walking. You can see the role these linked muscles and fascia would play in stabilizing the body in regular or athletic activity.



Figure 3

#### Figure 4: Leg and 'jump rope'

Here we see the lower part of the so-called 'Spiral line'. There is a long fascial loop that connects the front of the pelvis to the back of the pelvis via the arch of the foot. This line starts out from the anterior superior iliac spine with the tensor fasciae latae, which feeds into the iliotibial tract, which is connected fascially and very strongly to the tibialis anterior. The tibialis runs down to the weakest point of the arch - the first metatarsal-cuneiform joint, where it is always shown attaching. However, we were able to dissect a clear and strong attachment to the peroneus longus tendon that comes at the joint from the lateral side. Thus this 'jump rope' continues its

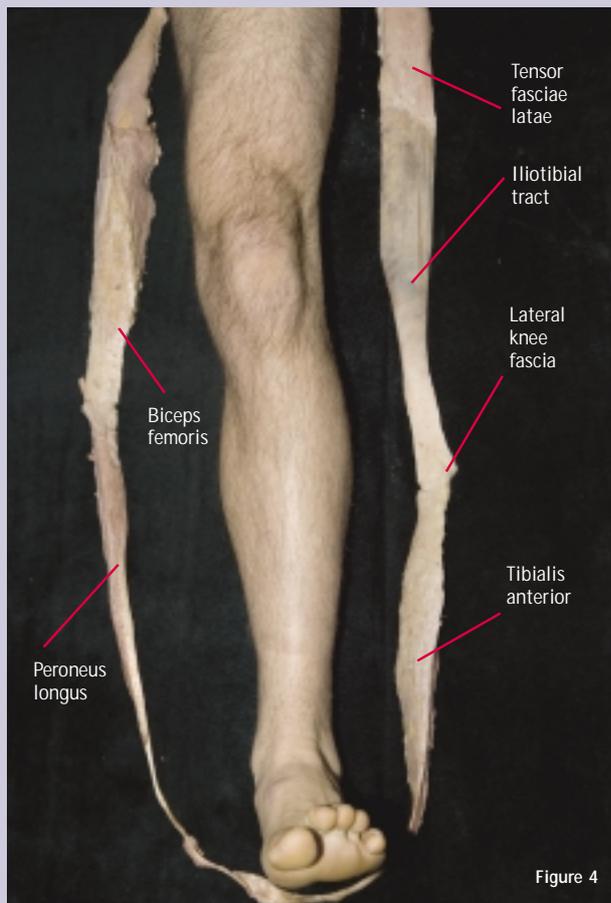


Figure 4

connection up the outside of the calf to the fibular head, and right on into the lateral hamstring, the biceps femoris. Again, this is a strong and distinct connection; nothing wimpy about it. This of course, brings us to the back of the pelvis at the ischial tuberosity.

Thus we have a palpable, visible, dissectable bit of evidence of the clinically observable connection between pelvic angle and arch support.

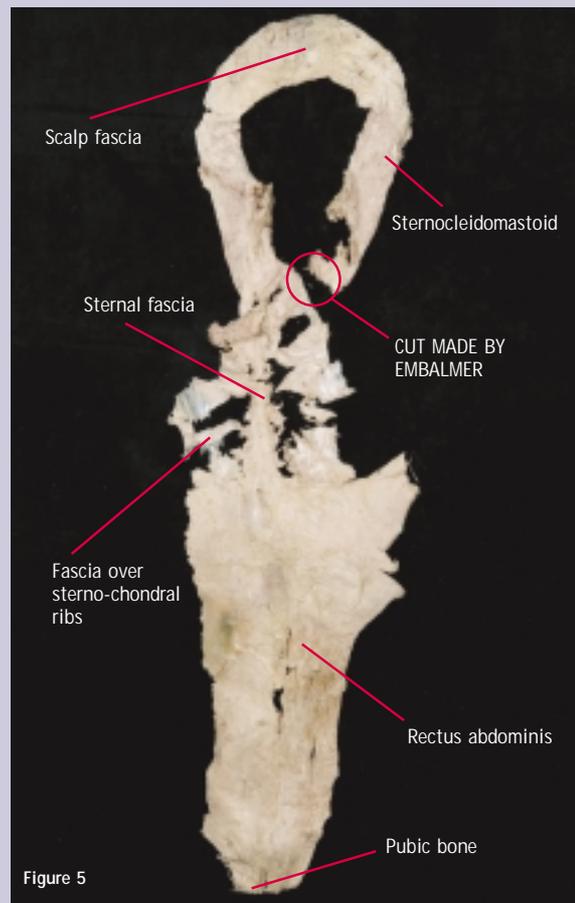


Figure 5

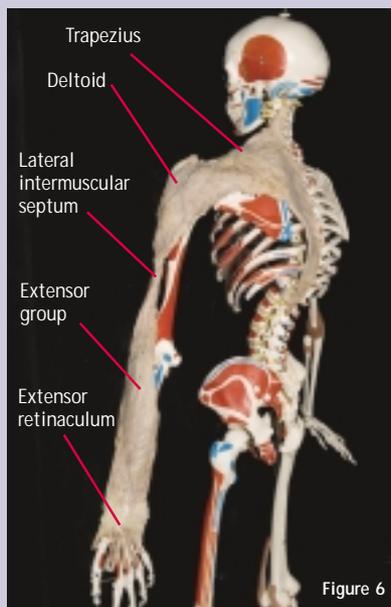
#### Figure 5: Front line chest

In theory, theory and practice are the same. In practice, of course, they are quite different. And so, reliably, not everything went according to the theory. Here is a dissection of the upper part of the superficial front line. The rectus is below, connected down to the pubic bone, and then firmly to the 5th rib. The SCMs are at the top, linked across the back of the head with a section of the epicranial fascia. Once again, the linkage between the two SCMs has rarely if ever been seen or written about. Together, they form a powerful pull down and forward on the head, which can create strain on the lambdoidal suture. (The cut through one SCM was made by the embalmer, not in the dissection.) The problem comes in the middle, across the sternum and ribs. In the book, the connection here is listed as the sternalis muscle and the sterno-chondral fascia. In the cadaver we used to dissect this, however, there

was little to no sternalis, and the fascia that covered the ribs did not dissect out as a separable layer, with the result that after hours of painstaking labour, it still looks like a bit of lace. The fascia running up the surface of the sternum is clear enough, but no up the cartilaginous part of the ribs.

In the biomechanical sense, this is a non-problem: the rectus can still communicate to the SCM via the bones, creating the postural patterns described in the book. The conundrum is that in my role as a somatic therapist I can feel such a layer under my hands when I am working alongside the sternum to free the breathing and rib cage rotation. It bothers me when I cannot find something I can feel - so this disparity remains unresolved by our first dissection.

# MYOFACIAL LINKS



**Figure 6: Arm line and skeleton**

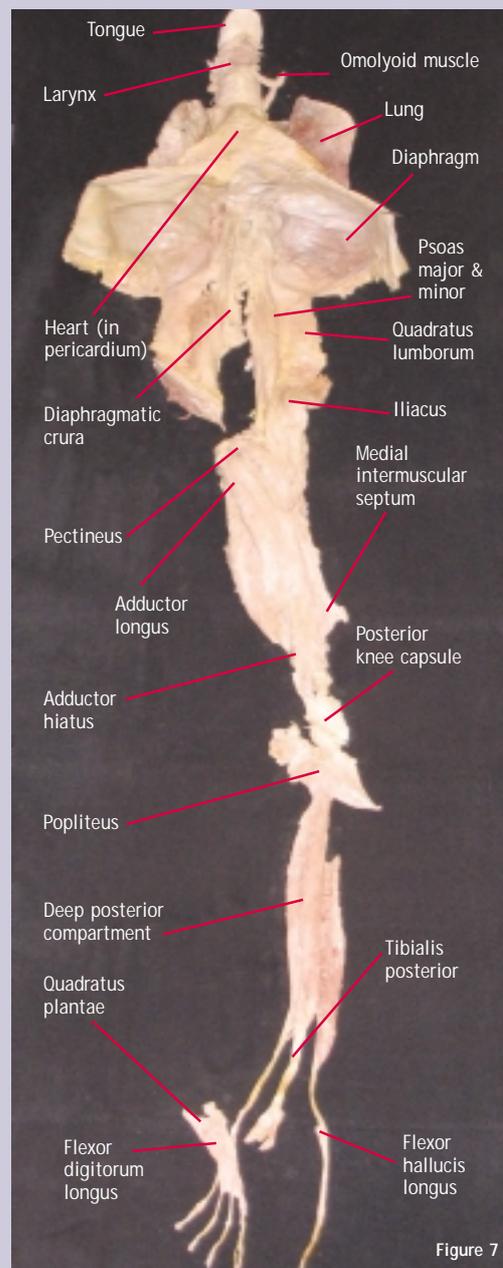
Here we see the Superficial back arm line, draped on a classroom skeleton. The unbroken connection between the trapezius and deltoid is clear, and from the deltoid via the intermuscular septum down to the extensor group and the back of the hand. So many arm injuries, conditions and symptoms rely on these types of connections - there are four arm lines; this is just one. Mapping these connections will allow current and future therapists to be more precise as they range out beyond the site of pain in search of relief.

**Figure 7: Deep front line**

Finally, this strange sea creature is actually a dissection of your core - or Deep front line, as we term it. The deep posterior compartment, with its three tendons to the toes and foot, is the power section, and this connects directly via the popliteus and the back of the knee capsule to the adductors. The adductors are a large muscle group, flanked by strong fascial intermuscular septa, which connect seamlessly to the psoas complex (psoas, iliacus, pectineus, and the quadratus lumborum).

The psoas and quadratus connect seamlessly to the diaphragm (remember, there are no bones in this specimen), so that tugs we put on either of these muscles put visible strain immediately in the diaphragm. The diaphragm is intimately attached to the pericardium of the heart, which then passes up with the throat and voicebox, on up to that final, important, most forward muscle of the core, the tongue.

This striking creature lives within you, and includes - though not pictures here, your transversus abdominis and your pelvic floor.



**Figure 7**

chanically, along the fascial fabric? Are they communicating electronically, along the fascial membranes? Or are they simply communicating neurologically, to the muscles involved? We suspect that the answer is: all three and maybe more. Further research, however, is necessary to determine the answer to this intriguing and fundamental question.

We hope to move in this direction by doing a fresh-tissue dissection within this next year. We also hope that some of the communication questions will be elucidated at the first international Fascial Research Conference, to be held in Boston Mass, USA in October of 2007 (<http://www.fascia2007.com>).

For more information visit our newly revamped website [www.AnatomyTrains.net](http://www.AnatomyTrains.net) and look out for the 2nd edition of the Anatomy Trains book due out in.....XXXXX

## THE AUTHOR

Tom Myers studied with Ida Rolf, Moshe Feldenkrais, and Buckminster Fuller, and has practiced integrative bodywork in variety of clinical settings. He is author of the world-renowned Anatomy Trains concept and lectures all over the world to a variety of manual and movement-based professions.