

Stress, breath, fascia and pH
An Interview with Leon Chaitow ND, DO, MRO
By Cathy Ryan

Internationally renowned advocate of massage therapy, Leon Chaitow is one of the most prolific authors of health care related books, articles and journal publications. 'Chaitow', is pretty much a household word amongst manual therapists.

Along with co-author, Sandy Fritz, a couple of massage therapy specific publications you might want to consider are: **A Massage Therapist's Guide to Lower back and Pelvic Pain** (Churchill Livingstone/Elsevier –2006. ISBN - 978-0443102189). This unique book considers the needs of the massage therapist, who previously may have had to adapt his/her own methodology from descriptions aimed at other health care professionals and ... **A Massage Therapist's Guide to Understanding, Locating and Treating Myofascial Trigger Points** (Churchill Livingstone/Elsevier –2006. ISBN - 978-0443102004), which provides an easy-to-read, easy-to-understand, evidence-based explanation of myofascial trigger points.

And now the interview for *Massage Therapy Canada Magazine!*

Q: One of the cornerstones of Naturopathic medicine is nutrition. Balancing the body's pH (by addressing nutritional practices as well as other things) is one of the first issues most ND's will address. Can you share with us any insights into the potential impact of acidic pH on the soft-tissues/fascia of the body?

A: This is a very complex area of human physiology that has not been fully studied. What we do know is that modern Western diet is thought to produce a low-grade systemic acidosis. And this (acidosis) influences what is known as NMDA receptor function which alters sodium, calcium and potassium balance. This low-grade metabolic acidosis, induced by diet and amplified by age, is thought to result in - among other things - clinical osteoporosis, loss of muscle bulk, diminished growth hormone secretion, and an increased tendency to epileptic episodes. (Yuan 2006)

Acidosis also increases during pregnancy. One effect of acidosis is an increased breathing rate, which if already dysfunctional, can result in what is known as respiratory alkalosis, which has effects I'll try to explain briefly later. (Levitsky 1995)

It's against that general background that we should consider evidence such as that offered by Issberner et al (1996) who showed a positive correlation between pain levels and local acidity. An acidic milieu alone (without muscle damage) seems to be sufficient to cause profound changes in the threshold sensitivity of pain receptors, so that a stimulus - say manual pressure - that under normal conditions would not be painful, is perceived to be painful when acidity increases (that is, when pH drops).

An acidic pH also stimulates the production of inflammatory precursors, such as bradykinin and helps to explain the pain associated with active myofascial trigger points.

Gerwin et al. (2004) have suggested that an acidic pH is directly involved in sarcomere contraction that leads to formation of the taut band phenomenon which is a characteristic of myofascial trigger points.

The role of pH in local soft tissue dysfunction and pain has been further confirmed by a recent histological study (Shah et al 2005), that revealed significant differences in the levels of pH (as well as substance P, bradykinin, norepinephrine and other substances) in people with active myofascial trigger points, compared with normal individuals.

Q: “Stressed Out” seems to have become an all too familiar mantra in our modern culture. Can you share with us any insights on the impact of stress on pH? (and subsequently ... the soft-tissues and fascia)

*A: book would be necessary to answer this question appropriately. Suffice to say that 'stress' commonly results in, or aggravates, feelings of anxiety and apprehension. **Think of the fight/flight response to any alarm situation - and the automatic adaptive responses of the body that follow** - including faster heart rate, increased blood pressure more rapid breathing, increased muscle tone. The shorthand for all this is sympathetic arousal. If this involves **a chronic state of affairs developing - with more or less permanently heightened muscle tone, where areas of local ischaemia are likely to evolve, and with the repercussions on local tissue pH I've already touched on.***

*Equally, there is likely to be a **chronic state of over-breathing**, and this can result in widespread (respiratory) alkalosis. The formula is in place for **a range of general and local changes that include one of the main effects of respiratory alkalosis, smooth muscle constriction**. Smooth muscles surround the gut and blood vessels, and when these are constricted this causes **a narrowing of these 'tubes' with a range of effects, including reduced delivery of oxygenated blood - leading to muscle fatigue, ischaemia, and the pain and other modifications I mentioned earlier.***

*It's important to remember that the self-regulating features of the body kick in, as part of these processes. For example - as mentioned - in a state of relative increased systemic acidosis, there will be an increase in breathing rate which helps eliminate carbonic acid (via carbon dioxide in the breath) and as alkalosis emerges, **if over-breathing is chronic, the kidneys start to excrete bicarbonate to balance this ... and the result of that is a disturbed calcium level, with effects that include tendencies to cramping, as well as neurological disturbances such as altered motor control.***

The bottom line is that stress can lead to a variety of changes that involve pH, and that certainly involve disturbed breathing patterns, and as already indicated, this has direct effects on the soft tissues of the body. (Chaitow 2004)

Q: At the First International Fascia Research Congress (FRC) one of the questions you put to the panel of scientists pertained to respiratory pH in relation to breathing pattern disorders. Can you share with us any of your insights with regard to the impact of breath on pH? (and subsequently the impact on the soft-tissues and fascia)

A: I think I have already answered aspects of this question. My question to research scientists at the Fascia Congress related to the observation that smooth muscle cells constrict in an alkaline setting - such as that produced by over-breathing.

The background to the question I posed, involved the fact that people who have lax ligaments, that is who are hypermobile, are more prone to hyperventilation (the extreme of over-breathing - Martin-Santos et al 1998, Bulbena et al 1993).

A further aspect of the background to the question related to the increasing knowledge we have that smooth-muscle-like cells are seeded throughout the fascial structures of the body (Ahluwalia 2001, Hastreite et al 2001), apparently to provide 'architectural support', during remodelling following trauma.

What I wanted to know from researchers was whether there was evidence that the increased tendency for these cells to constrict in an alkaline environment, might suggest that the over-breathing exhibited by hypermobile individuals, was in fact a functional, possibly physiologically useful, strategy, to assist in 'tightening' lax ligaments? The answer that emerged was that as yet there is no such evidence. My hope is that researchers will explore this further.

Q: What are a few key aspects of breathing pattern disorders that can/should be addressed by manual therapist's?

A: Manual therapists are uniquely placed to recognise the signs of over-breathing and to teach simple yet effective retraining methods, as well as to assist in freeing the structures that do the breathing - the diaphragm, intercostal muscles, accessory breathing muscles (scalenes, etc), the rib-cage and thoracic region in general.

The issues have been amply covered in a book I coauthored with physiotherapist Diana Bradley and psychologist Chris Gilbert: [Multidisciplinary Approaches to Breathing Pattern Disorders](#) (Churchill Livingstone 2002). My website www.leonchaitow.com, has more information on this vast topic - as well as some free downloadable articles - plus details of the book, which has a direct link to Amazon if anyone wishes to purchase it.

Q: Given what was presented at the FRC, can you share with us your thoughts or any new insights on the potential future impact of this information on fascial

- Assessment
- Manual Treatment
- Rehabilitative Exercise

*A: In July and October of 2008 the journal I edit, *Journal of Bodywork & Movement Therapies* published dozens of articles by keynote speakers from the Congress, as well as over 40 abstracts. I could not begin to answer your question without either missing important aspects, or taking dozens of your pages ... so I will leave it for those who are interested to seek out this information via *JBMT* (www.elsevier.com) or the Congress*

proceedings book (www.fascia2007.com). Remember, the next Congress is in Amsterdam in October 2009 at the Free University.

Q: Dr. Chaitow, what are you currently working on (researching/writing)?

A: *Pelvic floor problems and their link to breathing dysfunction.*

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