

Understanding Stress – Part 2

An interview with Dr. Leon Chaitow

The name Chaitow is pretty much a household word amongst manual therapists! Dr. Leon Chaitow, editor of *The Journal of Body Work and Movement Therapies*, is an internationally renowned lecturer and prolific author of health-care-related books, articles and journal publications. You'd be hard pressed to find a manual therapist who hasn't read a book, an article, an editorial, a blog or a tweet written by Dr. Chaitow.

Part 2 of this article features an interview with Dr. Chaitow, an ardent advocate of massage therapy, who will explain, for *Massage Therapy Canada* magazine, the interaction between pH, breathing, stress and pain to support his view that massage therapy can, indeed, play a beneficial role in the treatment of stress.

MTC: One of the cornerstones of naturopathic medicine is nutrition. Balancing the body's pH (by addressing nutritional practices as well as other factors) is one of the first issues most naturopathic doctors will address. According to Li and Fidler 2000, an acidic environment or acidic pH, which is often found in solid neoplasms, not only has been linked to cancer but to other issues as well. Dr. Chaitow, can you share with us any insights into the potential impact of acidic pH on the soft-tissues/fascia of the body?

LC: This is a very complex area of human physiology that has not been fully studied. What we do know is that the 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.



Given the interaction between pH, breathing, stress and pain, massage therapy can, indeed, play a beneficial role in the treatment of stress.

(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.

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.

MTC: “Stressed out” seems to have become an all too familiar mantra in our modern culture. Eighty per cent of workers polled reported that they feel stressed on the job. (Gallup poll – 2000) The World Health Organization has now identified job-related stress to be at epidemic proportions. Dr. Chaitow, can you share with us any insights on the impact of stress on pH (and, subsequently, ... the soft-tissues/fascia)?

LC: A book would be necessary to answer this question appropriately. Suffice it 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 and increased muscle tone. The shorthand for all this is sympathetic arousal. 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. 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).

An additional note here; more recent research, brought forth at the International Fascia Research Congress, has identified that smooth muscle cells (in the form of myofibroblasts) are also present in fascia – providing fascia with

HEALTH ISSUES ASSOCIATED WITH ACIDIC PH

- Heightened pain sensitivity
- Increased production of inflammatory precursors
- Increased sarcomere contraction – associated with myofascial trigger points
- Increased incidence of active myofascial trigger points
- Increased incidence of chronic muscle and myofascial tension
- Increased tendency of hyperventilation and respiratory alkalosis (resulting in increased incidence of muscle cramping and altered motor control)
- Increased risk of osteoporosis
- Loss of muscle bulk
- Altered sodium, calcium and potassium levels
- Diminished growth hormone production
- Increased tendency to epileptic episodes
- Increased risk of certain forms of cancer
- Increased risk of atherosclerosis and arterial wall degeneration



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the ability to actively contract or regulate “intrafascial” tension (Staubesand & Li 1996). Current fascia research implies that myofibroblasts (like other smooth muscle cells) are regulated by the SNS, vasoconstricting substances and neurotransmitters (Schleip 2003).

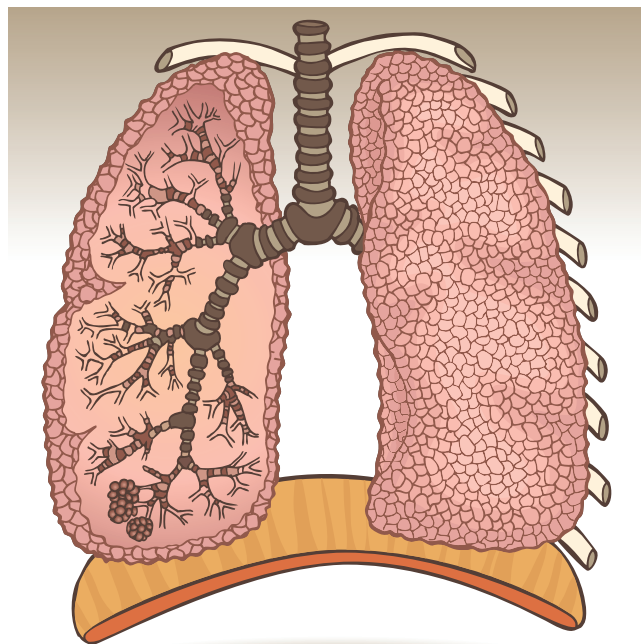
MTC: At the First International Fascia Research Congress (FRC), one of the questions you put forth to the panel of scientists pertained to breathing pattern disorders in relation to ligament laxity. Would you expand on any of your insights (already noted) with regard to the impact of altered pH on the soft tissues/fascia.

LC: My question to research scientists at the Fascia Congress related to the observation that smooth muscle cells also 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 relates 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 con-



Manual therapists can free the structures that do the breathing as well as teach simple, effective retraining methods for over-breathing.

strict 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.

MTC: What are a few key aspects of breathing pattern disorders that can be addressed by manual therapists?

LC: Manual therapists are uniquely placed to recognize 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 the 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 and a direct link to Amazon if anyone wishes to purchase it.

For the author's references, as well as references used by Dr. Chaitow to support his responses to the interview questions, please visit www.massagetherapycanada.com.

Cathy Ryan has maintained a diverse, treatment-oriented massage therapy practice, and an extensive postgraduate training roster, since 1990. She is a long-standing member of the OMTA and has served as a subject matter expert, examiner and examiner trainer at the CMTO's provincial licensing examinations. Ryan is the managing and commissioning editor for TouchU.ca, which provides education for touch professionals, students and the public. She is available to teach workshops and can be reached at: cryanrmt@gmail.com or www.touchu.ca.



THE FIRST INTERNATIONAL FASCIA RESEARCH CONGRESS

The First International Fascia Research Congress in Boston (2007) inaugurated a continuing series of international conferences dedicated to the newly emerging field of “Fascia Studies.” Although there is an extensive body of research on connective tissue, the study of fascia and its function as an organ of support has been largely neglected and overlooked for many years. Among the different kinds of tissues that are involved in musculoskeletal dynamics, fascia has received comparatively little scientific attention. “It is because the importance of fascia has been underrated over the last 30 years, that the Boston 2007 conference was a necessary step in addressing that neglect” – Serge Graceovetsky, PhD.

The Third International Fascia Research Congress is scheduled for March 28-30, 2012, in Vancouver, British Columbia. The selection of the MTABC by the directors of the Fascia Research Congress, a project of the Ida P. Rolf Research Foundation, is in recognition of the excellence, quality and commitment of BC's registered massage therapists (RMTs).

The 2012 Fascia Research Congress will centre on the latest in fascia research and relating the research findings to clinical issues and practical applications. Workshops before and after the main proceedings are also planned! For more information, visit www.fasciacongress.org or www.massagetherapy.bc.ca.

