

STUDIES & EVIDENCE SUPPORTING THE EFFECTIVENESS OF NATURAL THERAPIES

James Polyzoidis, ANASA WELLNESS

Ryoho Conference - 15 October 2023

We know yoga, meditation and other natural therapies work. Why do we need evidence?

Western medical systems fixated on evidence.

Faith based medicine and therapies not widely respected.

Natural therapies and eastern medicine/modalities often not respected due to lack of scientific proof... even though there's plenty of anecdotal evidence. Proof is in the pudding...rising popularity of natural therapies and practices eg yoga, pilates, weights/resistance training, meditation and mindfulness, homeopathy, herbs, medicinal cannabis, etc

Many great modalities (preventative and cures) are not prescribed due to lack of studies and trials and knowledge generally. Many GPs know very little about diet & nutrition.

Medical profession duty of care. Can't prescribe various natural therapies and nutritional or herbal medicine due to threat of being sued for professional negligence. Lack of evidence.

Lack of adequate health insurance and medicare coverage. Coverage generally covers you when you are broken (an expensive warranty system) rather than prevention and wellness. Insurance premiums not very dependant on your actual level of health and wellness. Use of actuarial models and costs based on averages. The healthy are subsidising the unhealthy.

Our job is to demystify natural therapies as much as possible and show why and how they work. However, just because there's no proof of efficacy yet doesn't mean they don't work. Sometimes science just needs time to catch up. And sometimes you just need to have faith in something that is not provable but has worked well sometimes for thousands of years.

There is a great growing body of evidence supporting the effectiveness of natural therapies. I have chosen a few interesting studies and other bodies of evidence for discussion. Eastern and natural modalities should not always be seen as alternatives to Western medicine. There are many areas where multiple approaches complement each other.

Please don't hesitate to contact me to draw my attention to any other interesting studies and evidence you may be aware of.

A. YOGA, MINDFULNESS & MEDITATION

Stretching Reduces Tumor Growth in a Mouse Breast Cancer Model 2018

HM Langevin et al

Harvard Medical School & Brigham and Womens Hospital

Scientific Reports volume 8, Article number: 7864 (2018)

“There is growing interest in developing non-pharmacological treatments that could boost natural defences against cancer and contribute to primary and secondary cancer prevention. Recent studies have shown that gentle daily stretching for 10minutes can reduce local connective tissue inflammation and fibrosis. Because mechanical factors within the stroma can influence the tumor microenvironment, we hypothesized that stretching would reduce the growth of tumors implanted within locally stretched tissues and tested this hypothesis in a mouse orthotopic breast cancer model. Female FVB mice (N=66) underwent bilateral injection of p53/PTEN double-null primary mouse mammary tumor cells into the third mammary fat pad. Mice were randomized to stretch vs. no stretch, and treated for 10minutes once a day, for four weeks. Tumor volume at end-point was 52% smaller in the stretch group, compared to the no-stretch group ...in the absence of any other treatment. Cytotoxic immune responses were activated and levels of Specialized Pro-Resolving Mediators were elevated in the stretch group. These results suggest a link between immune exhaustion, inflammation resolution and tumor growth. Stretching is a gentle, non-pharmacological intervention that could become an important component of cancer treatment and prevention.”

“In conclusion, our results demonstrate a 52% reduction of mammary tumor growth over one month in mice undergoing stretching for 10 minutes once a day without any other form of therapy. The potential clinical significance of our results lies in the possibility of developing a method of gentle stretching that could be well tolerated and testable in humans for primary or secondary cancer prevention, or in conjunction with cancer treatment. Although the mechanisms underlying the beneficial effects of stretching in our mouse breast cancer model remain to be elucidated, our results point to a possible link between inflammation resolution and immune exhaustion mechanisms that could be important in basic cancer biology.”

(“Importantly, however, it will be critical to test whether the mechanical action of stretching tissues could also increase the likelihood of metastatic seeding. Mechanical compression of tumors during massage has been linked to the presence of labeled epithelial cells in sentinel axillary nodes in patients with breast cancer who underwent breast massage prior to the procedure.”)

Insular Cortex Mediates Increased Pain Tolerance in Yoga Practitioners 2013

Chantal Villemure, Marta C'eko, Valerie A. Cotton and M. Catherine Bushnell

Alan Edwards Centre for Research on Pain/ McGill University Canada

Published in *Cerebral Cortex* October 2014;24:2732–2740

North American yogis tolerated pain more than twice as long as individually matched controls and had more grey matter (GM) in multiple brain regions.

Across subjects, insular GM uniquely correlated with pain tolerance. Insular GM volume in yogis positively correlated with yoga experience, suggesting a causal relationship between yoga and insular size. Yogis also had increased left intransular white matter (WM) integrity, consistent with a strengthened insular integration of nociceptive input and parasympathetic autonomic regulation.

Yogis, as opposed to controls, used cognitive strategies involving parasympathetic activation and interoceptive awareness to tolerate pain, which could have led to use-dependent hypertrophy of insular cortex. Together, these findings suggest that regular and long-term yoga practice improves pain tolerance in typical North Americans by teaching different ways to deal with sensory inputs and the potential emotional reactions attached to those inputs leading to a change in insular brain anatomy and connectivity.

The study mentioned that “ Several studies, including randomized controlled trials, have directly examined yoga as a potential treatment for pain and found evidence for the beneficial and safe use of yoga to alleviate different painful conditions (reviewed by Wren et al. 2011). These studies have often assumed that the benefits of yoga stem from its effect on the musculoskeletal system (e.g. increase in strength and flexibility). However, yoga also involves focused attention and has been shown to improve mood and depression (Woolery et al. 2004; Lavey et al. 2005; Shapiro et al. 2007). Both attentional and emotional factors influence pain perception (Rhudy and Meagher 2001; Villemure and Bushnell 2002; Wiech et al. 2008). Furthermore, yoga practitioners are encouraged to adopt an emotionally detached observation of the present moment and, accordingly, yoga has been shown to improve mindfulness scores (Brisbon and Lowery 2011), which are also associated with improved pain tolerance (Kingston et al. 2007). The emotional and cognitive tools developed in yoga practice could potentially alter a person’s relationship with pain, particularly by strengthening control over affective reaction to pain. However, the effects of long-term and regular yoga practice on experimental pain perception and the underlying neuroanatomical basis of altered pain perception have yet to be explored.”[emphasis added]

The study examined thermal detection and pain thresholds and cold pain tolerance in experienced North American yoga practitioners and individually matched controls as well as the strategies employed by the 2 groups to tolerate pain. To examine the neuroanatomical underpinnings of perceptual changes, they also examined structural differences in brain gray matter (GM) and white matter (WM) between these yogis and controls and correlate these differences with perceptual factor.

Findings:

- **Yoga Practitioners Have Higher Pain Tolerance Than Controls**
 - Yoga practitioners tolerated cold pain more than twice as long as the controls;

- Heat pain threshold was slightly higher in yogis
- there was no significant group difference in cold pain, cold detection, or warm detection thresholds
- **Yoga Practitioners Have More GM in Multiple Cortical Regions**, but only Insular GM Is Correlated with (Cold) Pain Tolerance. (Heat pain threshold did not correlate with GM volume in any of the clusters.)
- **GM Volume of the Left Insular Cortex Is Positively Correlated with the Duration (number of years) of Yoga Practice.**
 - Although both the left and right insular cortices were larger in yoga practitioners than in controls, with the size correlating with pain tolerance, only the left insula showed a relationship with the duration of yoga practice and with WM integrity.
 - This asymmetry is consistent with the homeostatic neuroanatomical model of emotion (Craig 2005) that proposes a left insular association with parasympathetic activity, and thus, the positive affect and affiliative emotions.
- **Yoga Practitioners Have Greater Left Intra-insular White Matter Connectivity (& integrity).**
- **Yogis and Controls Use Different Mental Strategies to Deal with Pain, Including Strategies Involving Increased Parasympathetic Function and Interoceptive Awareness (which is what yoga is all about and **must** stimulate development of the insular and other brain regions).**
 - yoga practitioners most commonly reported using strategies based on relaxation, acceptance, and non-judgemental focusing on the pain (reminiscent of mindfulness). These strategies included using or focusing on breathing (10 yogis), focusing on the sensation—observing it without reacting (9 yogis), relaxing their mind or body (8 yogis), and accepting the painful sensation (8 yogis). In contrast, most of the controls tried to either distract themselves (5 controls) or ignore the pain (4 controls).
 - “Since other studies show a sequential processing of pain in the human insula, from nociceptive input in the posterior insula to autonomic integration in the midinsula to subjective feelings in the anterior insula (reviewed by Craig 2011), the increased parasympathetic activation and interoceptive awareness of yoga practitioners could have led to use-dependent hypertrophy and connective strengthening in the insular cortex, thereby altering pain tolerance.”
 - “Based on the strategies used by yoga practitioners to tolerate pain, it appears that it is the yoga training itself that equips individuals with tools to tolerate more pain, and this increased pain tolerance could be mediated through autonomic activation of the insular cortex. The strategies used by yogis, including breathing techniques, focusing on sensations without reacting, relaxing the mind or body, and accepting pain, are all part of yoga training and are similar to mindfulness practice that has been shown to improve pain tolerance (Kingston et al. 2007)”
 - “Yoga practitioners are encouraged to adopt an emotionally detached observation of the present moment and, accordingly, yoga has been shown to improve scores on the Freiburg Mindfulness Inventory (Brisbon and Lowery 2011)...”
- **“Taken together, we interpret insular GM and WM alterations in yoga practitioners to reflect use-dependent GM hypertrophy [ie growth and development] and increased intra-insular processing related to pain affect regulation.** From the strategies used to tolerate pain reported by the yogis, we suggest that the observed insular adaptive changes related to successful pain affect regulation are mediated by increased parasympathetic activity and interoceptive processing.

- “In summary, in a sample of experienced North American yoga practitioners, we found neuroanatomical enhancements of the insula that were related to higher cold pain tolerance. Yoga practitioners had higher intrainular connectivity and they, but not the control subjects, dealt with pain using strategies involving insula-related interoceptive awareness, the use of which is promoted during yoga training. Based on these findings, we suggest that the insular cortex mediates the increase in pain tolerance associated with yoga as practiced and widely accessible in western societies.”

Interesting implications of this study:

- **Linear relationship between years of yoga practice and volume of insula cortex GM (and pain tolerance) and WM connectivity & integrity.** This suggests that yoga practice contributed to the anatomical differences, rather than the yoga practitioners having fundamentally different brains before beginning to practice yoga. The longer you practice the greater the changes and longer lasting the benefits. (Not much said about ages of yogi participants.) [Although both the left and right insular cortices were larger in yoga practitioners than in controls, with the size correlating with pain tolerance, only the left insula showed a relationship with the duration of yoga practice and with WM integrity.]
- **Brain is elastic. Like muscle tissue brain seems to experience use-dependent hypertrophy (growth/ development). How about non-use? Don't use it and you'll lose it. Good to keep it stimulated – engage in creative and “out of comfort zone” activities etc to keep it healthy.**
 - “Longitudinal studies in humans are now beginning to provide direct evidence for such **use-dependent plasticity**, by correlating FA increase in the appropriate WM tracts with skill acquisition (Keller and Just 2009; Engvig et al. 2011).”
 - “**Meditation**, another practice that encourages increased parasympathetic activity and interoceptive awareness, has also been associated with enhanced WM FA (Tang et al. 2010; Luders et al. 2011).”
- **All styles of yoga benefit.** The study enrolled practitioners of different yoga styles in order to capture common effects of yoga practice rather than the effects of a specific type of yoga.
- **Yogis are awesome!**

Mindfulness-Based Cancer Recovery and Supportive-Expressive Therapy Maintain Telomere Length Relative to Controls in Distressed Breast Cancer Survivors 2015

Linda E Carlson, Tara L Beattie, Janine Giese-Davis, Peter Faris, Rie Tamagawa, Laura J Fick, Erin S Degelman, Michael Speca

Cancer Feb 2015 page 476

Powerful study. Mindfulness-Based Cancer Recovery and Supportive-Expressive Therapy proven to maintain the health of the DNA of very stressed breast cancer survivors. Control group of patients/survivors with minimal support saw their DNA quality (telomere length and telomerase levels) deteriorate sharply in a short period and opened them up to risks of new chronic disease, cancer recurrence and faster aging.

Genomic Counter-Stress Changes Induced by the Relaxation Response 2008

Jeffery A. Dusek¹, Hasan H. Otu, Ann L. Wohlhueter, Manoj Bhasin, Luiz F. Zerbini, Marie G. Joseph, Herbert Benson, Towia A. Libermann
Harvard University.

PLoS ONE July 2009/ Vol 3' Issue 7/e2576

YOGA ASANA/ POSTURES

There is a growing body of scientific studies, evidence and literature about effects benefits & risks of specific asana/postures and sequences. These include the benefits of specific yoga postures (or sequences) for:

- Lower back pain
- Stress & Anxiety
- Hypertension
- Insomnia
- Cardiovascular & Heart health
- Depression
- Arthritis
- Balance & Fall Prevention
- Asthma
- Diabetes and metabolic disease

There are also studies and evidence of the dangers & risks of various postures (eg inversions for those suffering eye conditions such as glaucoma and hypertension).

YOGA NIDRA/ Non Sleep Deep Rest (NSDR) & Guided Meditation

Very effective protocol. Well documented studies and evidence of powerful benefits.

For Example see Yoga Publications Trust, Munger, Bihar India

SLEEP THERAPY

Well documented studies on topics of sleep deprivation, insomnia, and benefits of various therapies (including yoga, meditation, herbs etc). Sleep hygiene is the new buzz-word. Studies clearly show it is very difficult to achieve the minimum basic health/wellness without good quality sleep.

B. EXISTENCE OF MERIDIANS/ NADIS & ACUPUNCTURE & SHIATSU

The inability to detect or measure qi/chi or prana using modern scientific methods makes it difficult (impossible?) to subject them to empirical/scientific testing. Without such testing and support, they are not widely accepted within the framework of western medicine. That said, there is a growing body of research exploring the physiological and anatomical basis for some of the effects observed in traditional practices (which use the meridian pathways) eg shiatsu and acupuncture. Often there is evidence showing how certain therapies are correlated with certain outcomes (which are suggestive of the existence of the meridians), but this does not amount to proof of actual causation or the existence of meridians.

- **Acupuncture Studies**
 - **Qiufu Ma Phd** has a lab (in the USA) dedicated to figuring out biological mechanisms of acupuncture. Eg Study showing dramatic reduction in systemic inflammation when using low voltage electro acupuncture at [ST 37]
 - **Yan et al 2019** ST 37 Acupuncture point for Large Intestine regulation. Major distal point for treating irritable bowel syndrome (IBS) has also shown effectiveness at reducing inflammation
 - **Virtual Roundtable Discussion Highlighting the Latest Acupuncture Research and Practice 2020**
<https://www.liebertpub.com/doi/abs/10.1089/acu.2020.29158.rtl?journalCode=acu>
- **Spina Bifida and Urinary Bladder disorders**
 - University of California San Francisco UCSF program
 - Again we have correlation vs causation issues.
- **Loss of taste sensation when/after battling some diseases eg COVID**
 - Eastern Hypothesis: Spleen Meridian (earth element) is heavily taxed/drained when supporting metal (lung and bowel) pathways which are heavily used to fight the pathogen (earth nurtures metal). Furthermore, as the body is also fighting the disease with fire element functions (triple heater and heart constrictor/pericardium), the earth element cannot itself be nurtured and so becomes exhausted (fire nurtures earth).
 - Western Medicine/Science does not have an explanation as to why this occurs. Currently impossible to prove this scientifically.
- **Monash Uni (Melb) Dept of regenerative medicine – Salamander studies**
 - Salamanders have shown remarkable powers of regeneration - may require the existence of meridians to explain some study outcomes.
- **Other Evidence?**

C. RESISTANCE TRAINING – Weight training and anti-gravity training (can include yoga)

Well documented benefits:

- Hormonal health – testosterone and oestrogen/ progesterone – retention and addition of lean muscle as you age
- DEXA Scans show bone density benefits
- Help with insulin resistance and metabolic disease eg diabetes
- Anti-aging protocols – grip strength (hanging), leg butt and core (deadlifts, squatting).
- etc etc etc

D. CARDIOVASCULAR FITNESS & VO2 MAX

- Well documented benefits of cardio work & fitness.
- Need to be oxygen efficient (VO2 max as high as possible) and place as little stress on the heart as possible. Very important as you age. See <https://www.healthline.com/health/vo2-max#benefits>
- Walking and light jogging VERSUS stressful running. Fitness does not always equate with good health. EXTREME FITNESS Versus CHILLED FITNESS.
- Other practices improving your VO2 max (oxygen efficiency): Meditation, Mindfulness & Breath Work (pranayama).
- detox regimes (getting rid of systemic acids which give you water retention/ more blood volume and therefore more stress on the heart and cardiovascular system). Wim Hoff breathing reduces acidity and then lowers need for oxygen.
- Breathing - knowledge about breath and the role of the nervous system eg the role of vagal nerve eg regulating parasympathetic system, heart rate variability, digestion etc

E. NUTRITIONAL & HERBAL MEDICINE

- Massive evidence supports the superiority of whole foods over highly processed foods.
- Herbal remedies have been used for thousands of years in all cultures and are well accepted and have also become the foundation of many pharmaceuticals.
- Homeopathic Medicine/remedies. Many are widely accepted. Many aren't.
- Macrobiotic Diet/ Lifestyle. Anecdotally very effective – generally lacks supporting clinical evidence.
 - Ideas of biological transmutation (transformation of one element into another by the body (eg sodium to potassium or calcium) espoused by Louis Kervran & George Ohsawa (father of macrobiotics) have failed to gain acceptance by the scientific community. However, other new fields such as epigenetics and quantum physics are showing powerful effects that are being achieved on matter by consciousness/mind and diet. A healthy body doubtless has an amazing ability to

adapt and manufacture compounds/molecules it needs to survive and thrive, even if this doesn't technically amount to transmutation.

- Many studies are emerging on the uses and protocols for salt consumption and pH regulation. Ohsawa prescribed a maximum ratio of 1:5 for salt (yang) to potassium (Yin). This has been supported by current medical/ scientific guidelines which suggest a minimum ratio of 1: 1.75 for sodium/potassium. WHO guidelines: 2000mg sodium (5 grams of salt) and minimum 3,500mg potassium per day. Magnesium (yin) need up to 400mg per day. Latest research shows benefits up to 5000mg sodium per day especially in very active people (or hot climates) with the average person needing around 3 grams of sodium per day (1 and a half teaspoons from ALL sources). Japanese diet tends to be heavy on salt and it has been suggested that the Japanese race has a high tolerance of salt. The Japanese also suffer a high rate of stomach cancer. (AG did not accept this and said this is more likely due to modern fried foods being eaten there.) It is prudent to be mindful of excessive salt consumption.
- Eating locally produced and seasonally available produce. Common sense.
- Role and importance of the gut and microbiome. Emerging massive field of learning.- Acceptance of the benefits of fermented/probiotic foods and importance of prebiotic foods (ie fibre) and avoiding antibiotic foods and substances.