Trauma and Inflammation

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Introduction

- Masters in Counseling, Licensed Associate Counselor
- Integrative Nutrition Health Coach
- Trained in Nutrition and Integrative Medicine for Mental Health Professionals
- Trained in Eye Movement Desensitization and Reprocessing (EMDR) and Somatic Experiencing (SE)

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Resources Page

https://aztrauma.org/resources-login/account/checkout/?level=1

Overview

Trauma and Inflammation

- What is inflammation?
- How does trauma contribute to inflammation?
- Techniques for reducing inflammation

The Bodies Response to Stress

- The nervous system and trauma
- Nature v. Nurture? And how trauma can affect our genes
- Self-Regulation Techniques

Integrative Approaches

- Nutrition and Blood Sugar Stability
- Benefits of movement and exercise
- Gut Health
- Somatic Therapies

Why Trauma and Inflammation?

Trauma facilitates disconnection

Physiological basis of trauma

Need to address the whole person

The Symptoms - Trauma

- Intrusive thoughts
- Mood swings
- Nightmares
- Disorientation
- Fatigue/Insomnia
- Feeling numb
- Revved up/Anxious
- Relational Problems
- Depressed Mood
- Brain fog/memory problems

The Symptoms - Inflammation

- Depression
- Anxiety
- Mood disorders
- Gastrointestinal complications
- Fatigue
- Insomnia
- Joint pain
- Brain fog
- Headache

What is Inflammation?

Inflammō: “to kindle, set on fire”

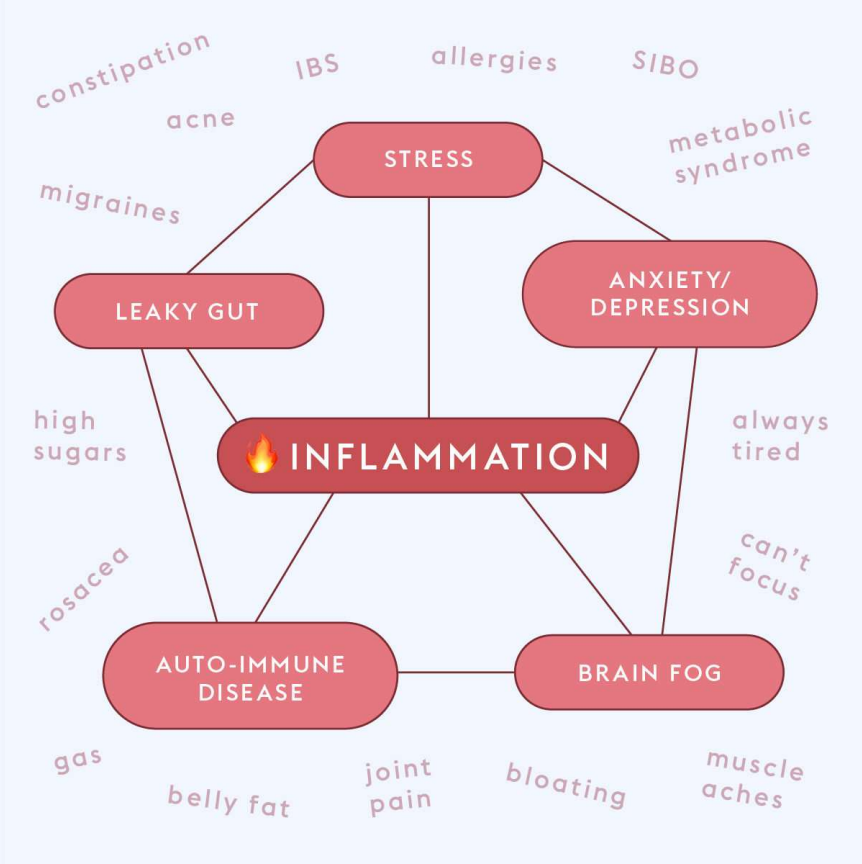
- Immune response
- Acute v. Chronic
- Allostatic Load

Causes:

- Chronic stress/trauma
- Stealth infections
- Diet
- Toxin exposure
- Infection
- Unhealed wound/injury

How Does Trauma Contribute to Inflammation?

- Disruption of gut microbiome
- Chronic nervous system activation
- Immune suppression controlled by the Vagus nerve
- Immune response
- Bi-directional relationship between trauma and inflammation



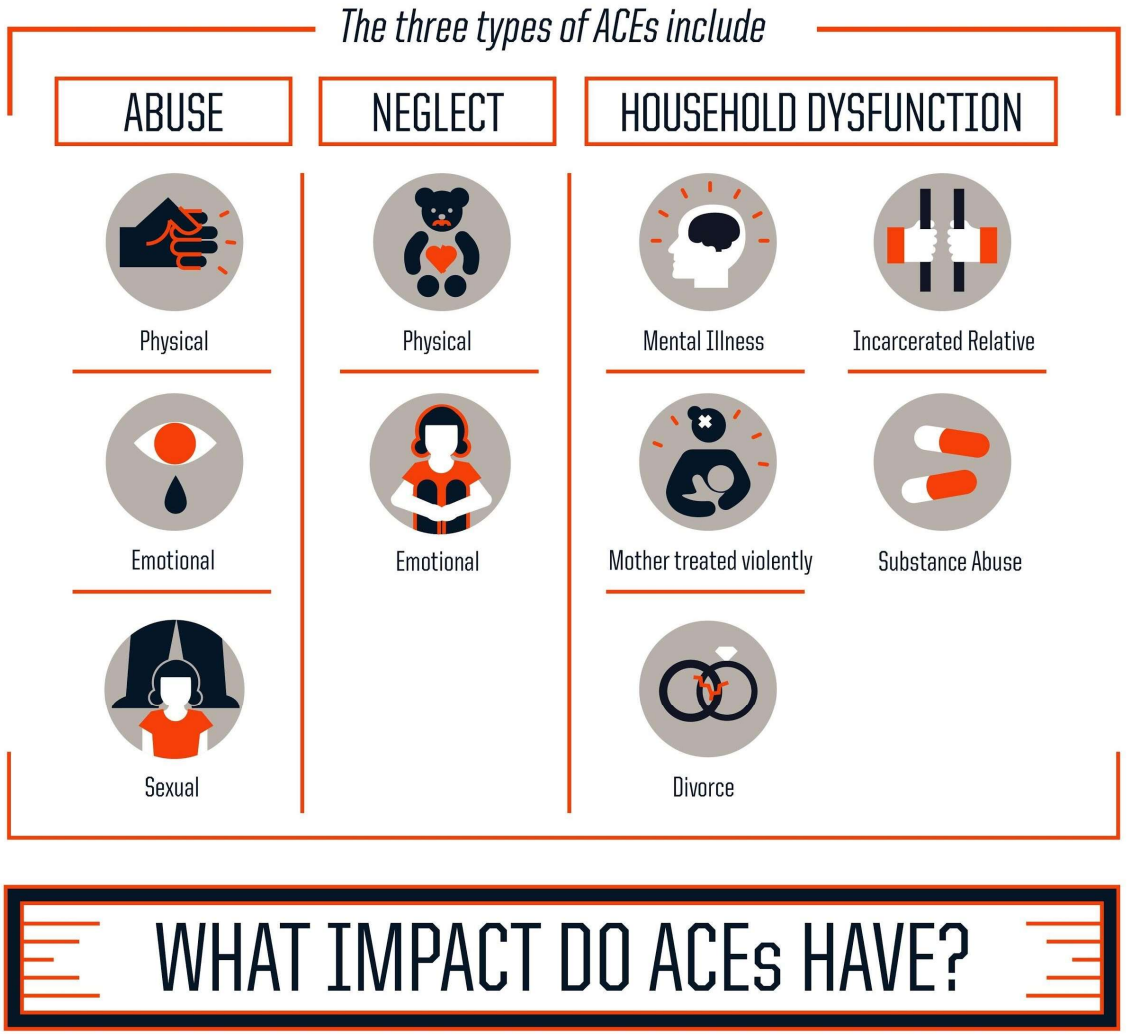
"There is agreement that PTSD appears to involve shifts within the central nervous system and immune/inflammatory processes, such that the effects of PTSD-related chronic stress causes a dysregulation of these systems, which then incurs an elevated risk for the subsequent development of multiple chronic illnesses with an inflammatory pathophysiology" (Speer et al., 2018, p.119)

Stress, Inflammation, and Chronic Disease

- PTSD and ongoing systemic low-grade inflammation
- Genetics: 10-30% from genetics, 70-90% from environment
- Disease process has a variable timeline

"All investigators cited an urgent need for the development of interventions that address inflammation and chronic disease in PTSD, as its physical comorbidities reduce life expectancy by 10-17 years" (Speer et al., 2018)

3 Types of ACE's



Source: Centers for Disease Control and Prevention
Credit: Children's Medical Education

ACE Score and Health Outcomes

A whopping 70 percent of the 17,000 people in the ACE Study had an ACE score of at least one; 87 percent of those had more than one. With an ACE score of 4 or more, the likelihood of chronic pulmonary lung disease increases 390 percent; hepatitis, 240 percent; depression 460 percent; suicide, 1,220 percent.

Emily's Story

Presenting Complaints

- Abandonment issues
- 4 sexual assaults
- Abusive relationship
- Grief
- Eating disorder
- Self-harm hx
- Substance abuse hx

Integrative Assessment

- Migraines
- Stomach pain
- Surgeries: under general anesthesia 8 times
- 3 car accidents
- Several concussions
- Many broken bones
- Asthma

Review: Trauma and Inflammation

- Inflammation is an immune response to threat
- The effects of trauma lead to a disorganization of the system that leads to chronic inflammation
- Chronic inflammation can cause a breakdown of healthy tissue leading to chronic illness

ACE Survey

Adverse Childhood Experience (ACE) Questionnaire

Finding your ACE Score ra hbr 10 24 06

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often** …
   Swear at you, insult you, put you down, or humiliate you?
   or
   Act in a way that made you afraid that you might be physically hurt?
   Yes No If yes enter 1 _____

2. Did a parent or other adult in the household **often** …
   Push, grab, slap, or throw something at you?
   or
   Ever hit you so hard that you had marks or were injured?
   Yes No If yes enter 1 _____

3. Did an adult or person at least 5 years older than you **ever**…
   Touch or fondle you or have you touch their body in a sexual way?
   or
   Try to or actually have oral, anal, or vaginal sex with you?
   Yes No If yes enter 1 _____

4. Did you **often** feel that …
   No one in your family loved you or thought you were important or special?
   or
   Your family didn't look out for each other, feel close to each other, or support each other?
   Yes No If yes enter 1 _____

5. Did you **often** feel that …
   You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
   or
   Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
   Yes No If yes enter 1 _____

6. Were your parents **ever** separated or divorced?
   Yes No If yes enter 1 _____

7. Was your mother or stepmother:
   Often pushed, grabbed, slapped, or had something thrown at her?
   or
   Sometimes or often kicked, bitten, hit with a fist, or hit with something hard?
   or
   Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?
   Yes No If yes enter 1 _____

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
   Yes No If yes enter 1 _____

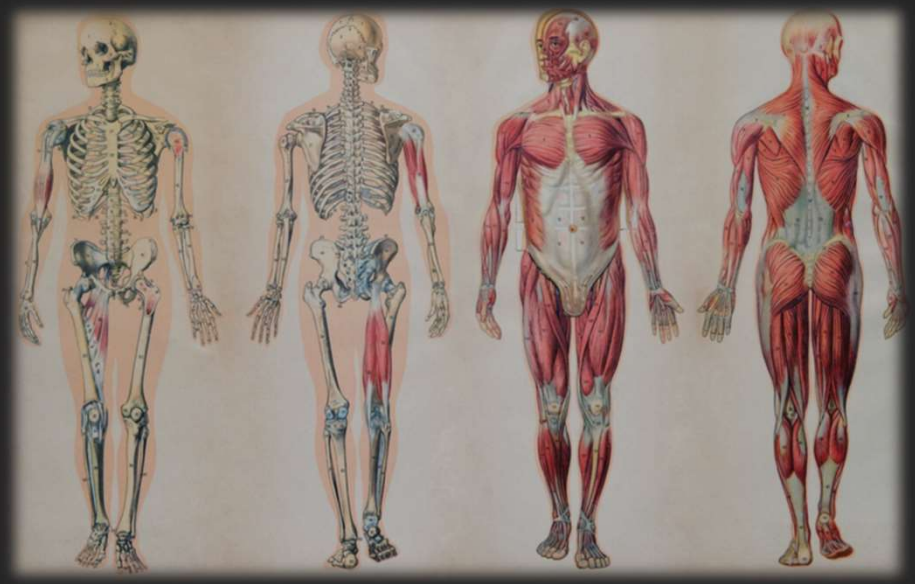
9. Was a household member depressed or mentally ill or did a household member attempt suicide?
   Yes No If yes enter 1 _____

10. Did a household member go to prison?
    Yes No If yes enter 1 _____

Now add up your "Yes" answers: _____ This is your ACE Score

The Bodies Response to Trauma and Stress

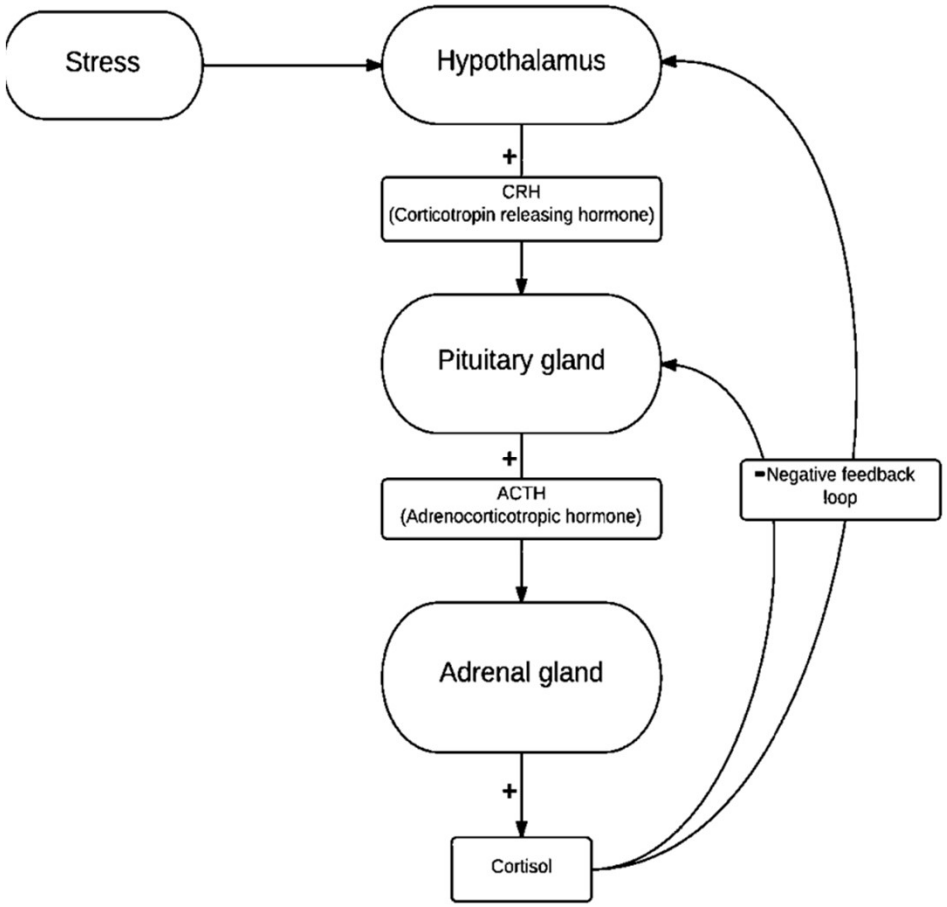
- Physiology of Trauma
- What does this mean for health?
- Epigenetics, intergenerational and collective trauma
- Relationship to inflammation
- Regulating the nervous system: Helping restore rhythm and resilience



How our Physiology Interacts with Trauma

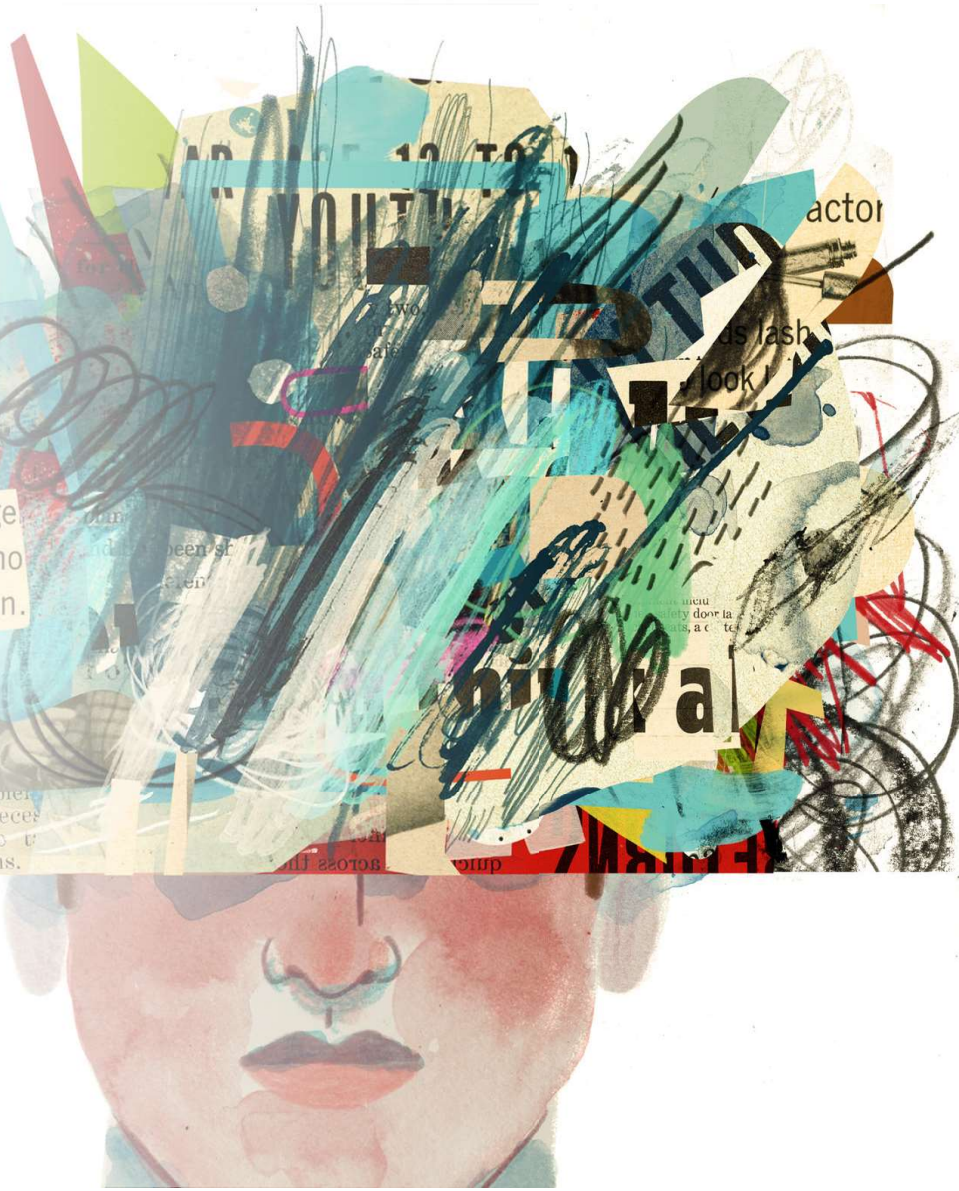
Psychoneuroimmunology System (PNI)

- Hypothalamic Pituitary Adrenal Axis (HPA Axis)
- Psychological stimuli are first evaluated in the emotional center of the brain
- If brain perceives threat, it will trigger the hypothalamus will communicate with the pituitary
- The pituitary signals the adrenal glands to release cortisol
- Simultaneously, the hypothalamus sends messages via the fight/flight part of nervous system



But What is Considered a Threat?

“The same influences that the organism is most likely to interpret as emotionally stressful are, not surprisingly, also the most powerful psychic triggers for the HPA axis: “psychological factors such as uncertainty, conflict, lack of control, and lack of information are considered the most stressful stimuli and strongly activate the HPA axis. Sense of control and consummatory behavior result in the immediate suppression of HPA activity” (Mate, 2003, p. 89-90)



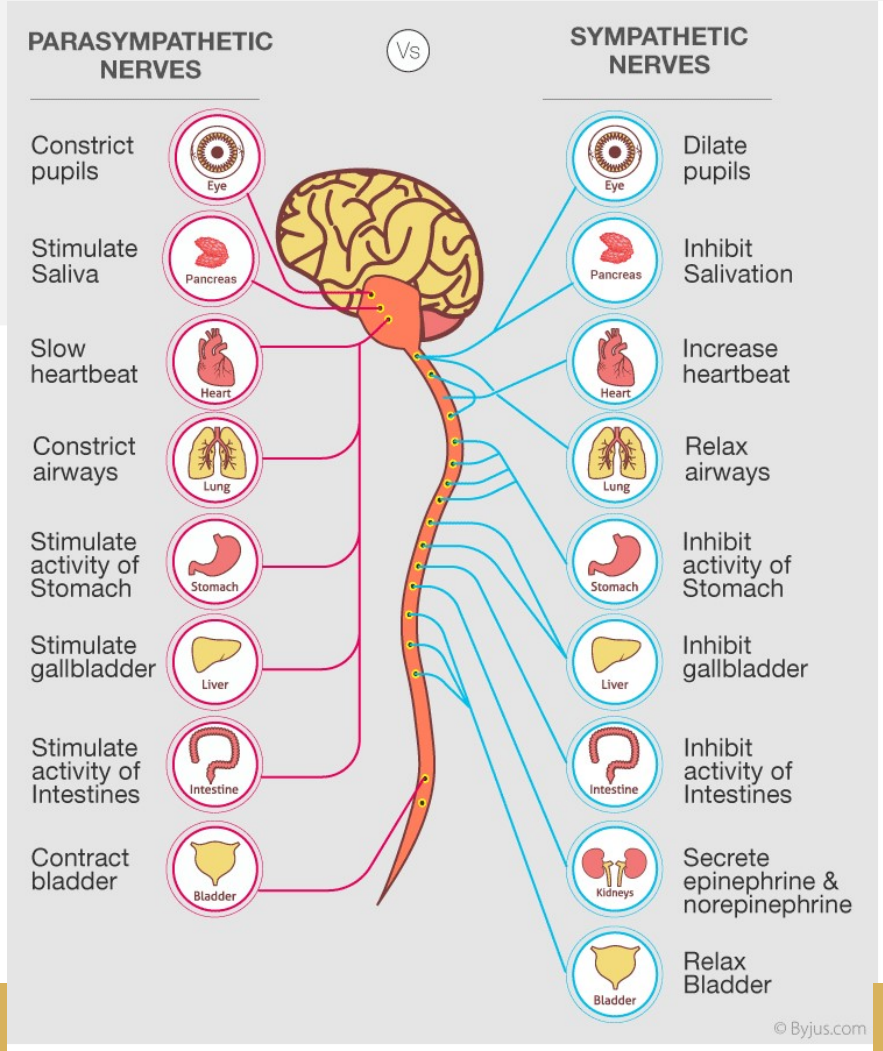
The Nervous System

Sympathetic Activation

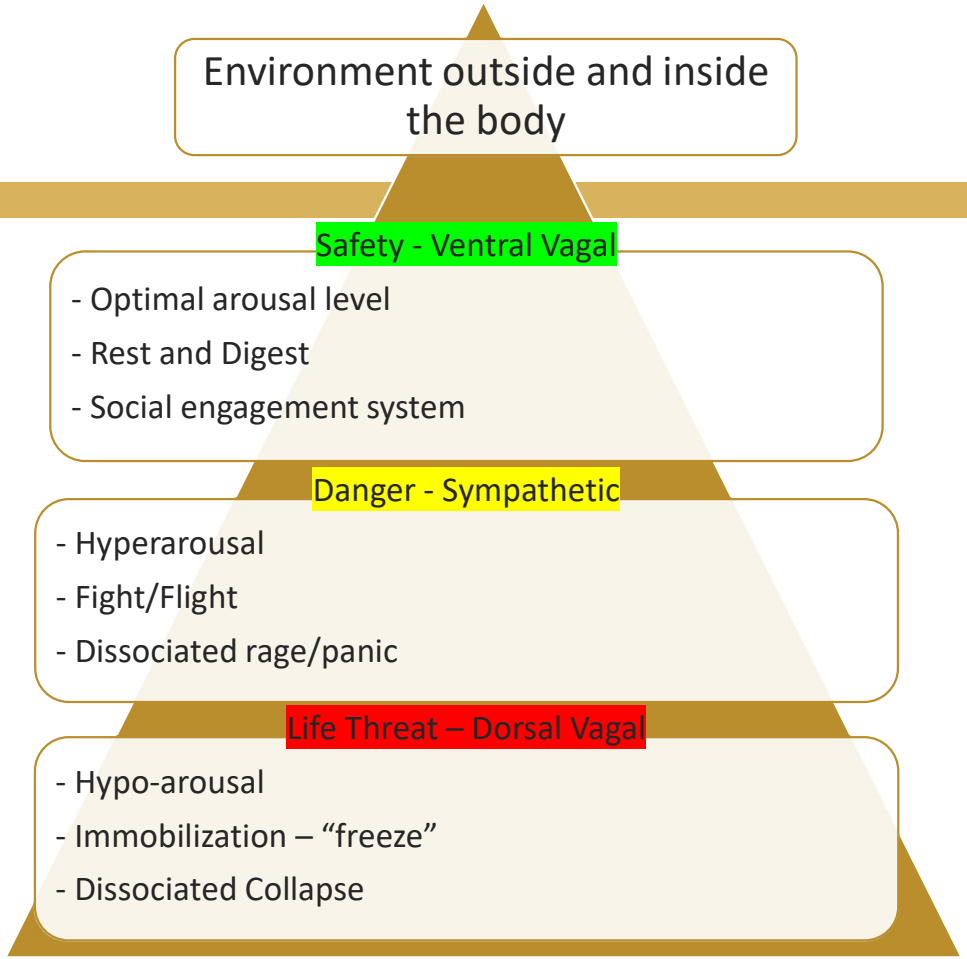
- Responsible for mobilization
- Fight/flight
- Suppress Immune Function

Parasympathetic Activation

- Rest
- Digest
- Social engagement system is active



The Nervous System



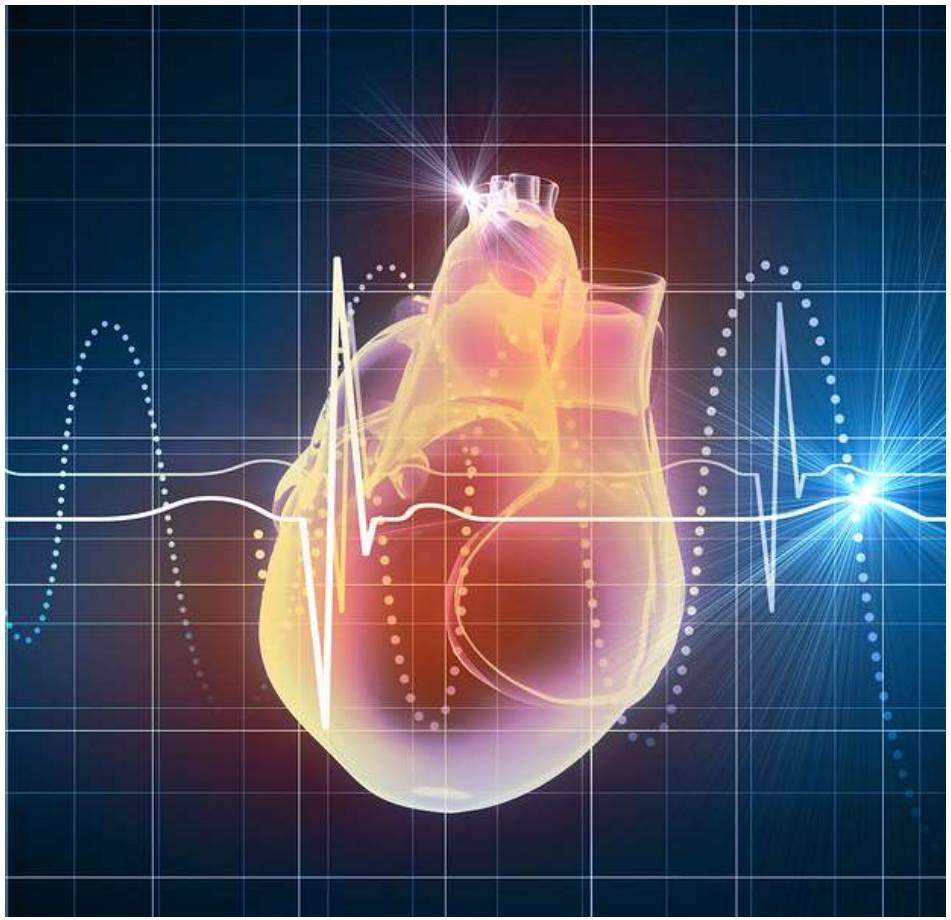
Adapted from Porges 2006

Review: The Bodies Response to Trauma

- Internal/external stress
- Triggers HPA Axis
- Activates sympathetic nervous system
- Level of threat assessed
- If threat is evaded the system resets
- Ventral vagal system becomes active
- *Unless it is unable to reset, gets stuck in the ’on’ or ‘off’ position

Trauma, the Body, and Health

“PTSD co-occurs with dysregulation of the HPA axis, impaired GC signaling, and the development of a pro-inflammatory state” (Neigh et al., 2016).



Freeze Response and Chronic Health Issues

- Cell Danger Response
- The process of disease happens when this process gets stuck
- Cells are caught in a repeating loop of incomplete recovery
- Stressed cells release ATP to signal danger – encodes memory more vividly
- Freeze state conditions reflect a metabolic state of hibernation

What Does This Mean for the Body?

"The study found that triggering events for ME/CFS (chronic fatigue) fell broadly into five groups:

- Biological (viral, bacterial, fungal/mold, and parasitic infections)
- Chemical exposure
- Physical trauma
- Psychological trauma
- Unknown

These factors alone are not sufficient to cause chronic fatigue, rather, these conditions must be present with the activation of the cell danger response " (Naviaux et al., 2016).

Trauma, Stress, and Mental Illness

- All of these factors play a key role in the development of mental illness
- Current way of diagnosis indicates a shared set of symptoms
- Move to the root cause of “mental illness”
  - Histamine intolerance
  - Toxicity
  - Gut health
  - Hormone disruption/imbalance
  - Neurotransmitters
  - Circadian rhythm disorders
  - Food intolerances

VIDEO: Does the immune system link childhood trauma to adult mental illness

Can be found at

https://www.youtube.com/watch?v=wZDVgxuFKQk

This material furthers the goal of the copyright to increase awareness of the link between early childhood stress, inflammation, and adult mental illness

Purpose of use: To illustrate the role inflammation plays in mental illness

Thought provoking question?

Is inflammation or a client's immune system something you have ever assessed for considered when conceptualizing their diagnosis or treatment plan?

VIDEO: Does the immune system link childhood trauma to adult mental illness

REVIEW

- No division between mind and body
- The functioning of all bodily systems impacts mental health
- HPA Axis is triggered by uncertainty
- Activation of sympathetic NS mediates a wide range of bodily systems including the immune system
- Chronic activation of fight, flight, and freeze are co-occurring with chronic disease
- Mental illness and physical dysfunction are co-morbid conditions

Epigenetics

"History is not the past; it is the present. We carry our history with us. We are our history"
James Baldwin

- Genes remain the same, but their expression can change
- Gene alterations can make us more *or* less susceptible to illness
- Epigenome
- Methylation is the action that can modify genes

Trauma and Epigenetics

- Trauma affects how our genes are expressed
- These genetic changes can also be healed or reversed
- Inherit modified genes from ancestors
- Animal Study

“The veterans who no longer had PTSD after treatment showed a decrease in methyl attachments on specific genes compared to levels before treatment. The veterans who improved also had fewer methyl group attachments than the veterans who did not” (Yehuda et al., 2013).

VIDEO: Epigenetics: Why Inheritance Is Weirder Than We Thought

Can be found at

https://www.youtube.com/watch?v=AvB0q3mg4sQ

This material furthers the goal of the copyright to introduce people to the idea of epigenetics

Purpose of use: To demonstrate how epigenetic changes due to experience are passed down through several generations

Thought provoking question?

How could the idea that our client's parents, grandparents, and great grandparents' experiences effect what we do in the therapy room change how we treat clients?

VIDEO: Epigenetics: Why Inheritance Is Weirder Than We Thought

Intergenerational Trauma

- Individual
- Collective
- Systemic Oppression and Marginalization
  - Indigenous/First Nations
  - People of Color
  - LGBTQ
  - Women

Intergenerational Trauma: Genetics

- Studies began with children of Holocaust survivors
- Higher prevalence of PTSD, mood and anxiety disorders

"Studies published over the next decade demonstrated that, in the absence of their own traumatic exposures, offspring of Holocaust survivors were more likely to show HPA axis alterations associated with PTSD, such as lower cortisol levels and enhanced GC receptor responsiveness" (Yehuda & Lehrner, 2018)

Intergenerational Trauma: Conditioning

- Effects were from individual experiences with a traumatized parent
- Learned behaviors
- Still resulted in biological changes

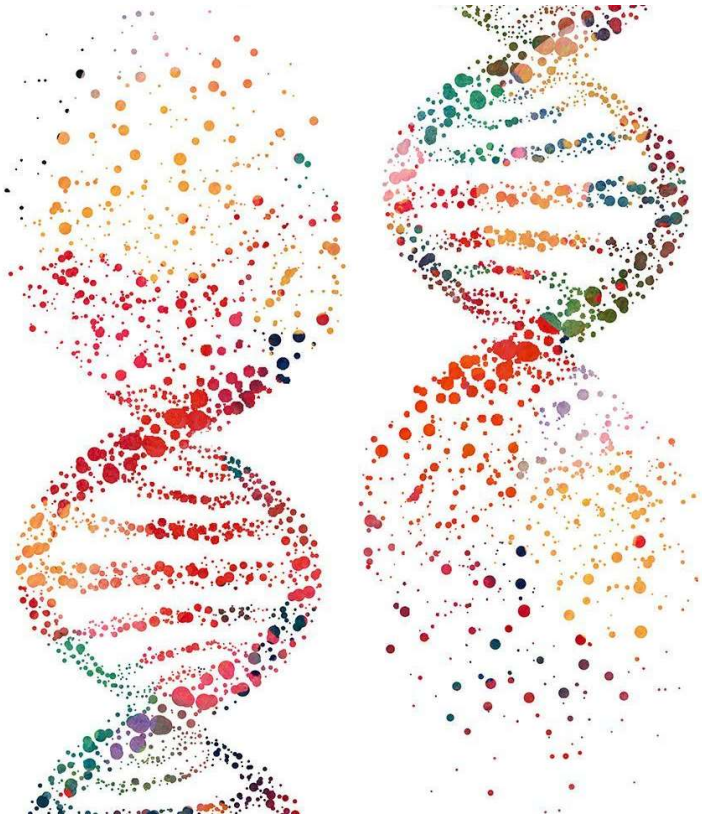
“Similar types of symptoms were later described in the children of Vietnam veterans, a phenomenon that was termed “secondary traumatization”. This concept did not imply an intergenerational transmission, but rather referred to the stressful nature of living with a traumatized individual who may be expressing symptoms and recounting or reliving horrific experiences” (Yehuda & Lehrner, 2018).

Intergenerational Trauma, Epigenetics, and Inflammation

- Higher prevalence of PTSD, mood and anxiety disorders
- Higher rates of chronic disease and shortened life spans among groups with a history of oppression and/or marginalization Due to:
    - Genetic susceptibility from trauma
    - Environmental
    - Lack of access/poverty
    - Hypervigilance

REVIEW: It's All in the Genes. Or Is It?

- We can turn genes 'on' or 'off'
- Trauma can affect how our genes are expressed
- But so can healing
- Intergenerational Trauma can come from many different sources
- Both Nature and Nurture play a part



VIDEO: Study finds PTSD effects may linger in body chemistry of next generation

Can be found at

https://www.youtube.com/watch?v=zV9sya4F5KQ

This material furthers the goal of the copyright to increase awareness of the link between parental stress and genetics changes in offspring.

Purpose of use: To illustrate the potential effects of transmission of traumatic experiences via epigenetics

Thought provoking question?

Do you assess clients for potential epigenetic factors that may be contributing to current functioning?

VIDEO: Study finds PTSD effects may linger in body chemistry of next generation

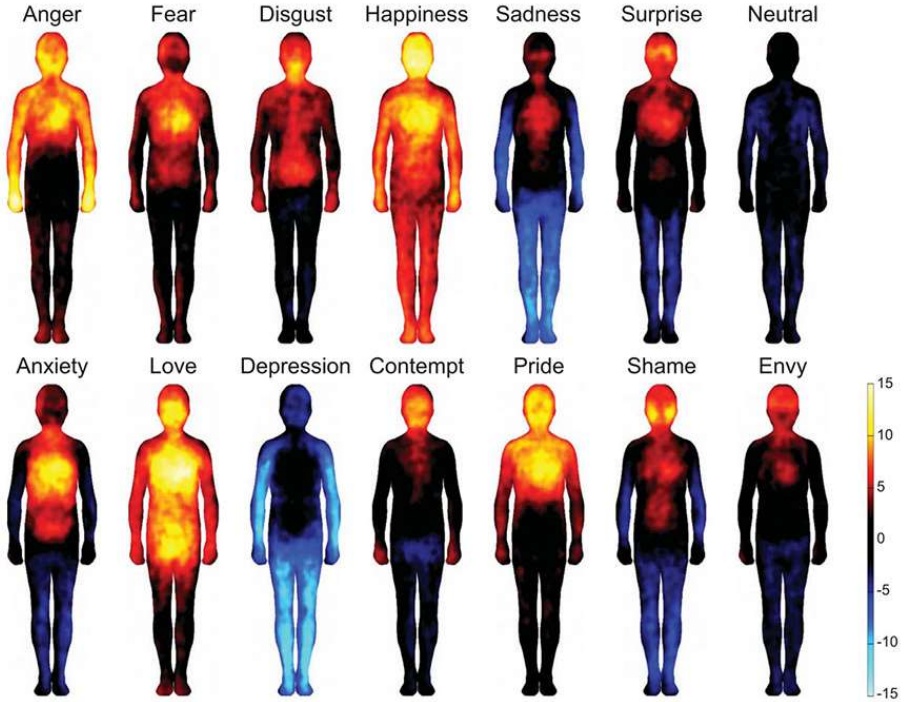
From Hurting to Wholeness

Areas to consider:

- Bioindividuality
- Integrative assessment
- Biological rhythms
- Nature/creativity
- Relationships
- Food
- Herbs
- Detox
- Exercise
- Somatic work
- Breath practice

Healing the Body: The Nervous System

“In many shamanic societies, if you came to a medicine person complaining of being disheartened, dispirited, or depressed, they would ask one of four questions: "When did you stop dancing? When did you stop singing? When did you stop being enchanted by stories? When did you stop being comforted by the sweet territory of silence?”



Rhythm and Resilience: Regulating the Nervous System

- Somatic therapies
- Somatic Mindfulness
  - Walking
  - Skin brushing
  - Eating
  - Tactile activities
  - Washing dishes
- Rhythm
- Stimulate Vagus Nerve

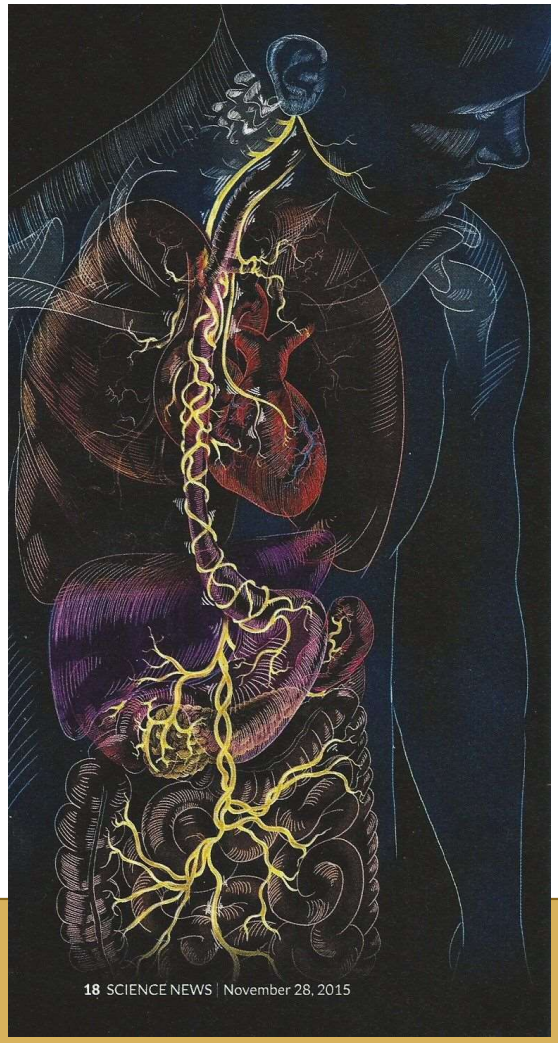
Rhythm and Resilience: Regulating the Nervous System

Vagus Nerve

- Connects to heart, lungs, and digestive tract
- Modulator of gut-brain axis
- Vagus nerve activates parasympathetic nervous system
- Increasing vagal tone has been shown to decrease over-activity of the HPA axis, activate the parasympathetic NS, and help regulate mood

Exercises

- Breathwork (4-7-8 breathing, box breathing)
- Singing
- Chanting
- Cold Plunge
- Meditation



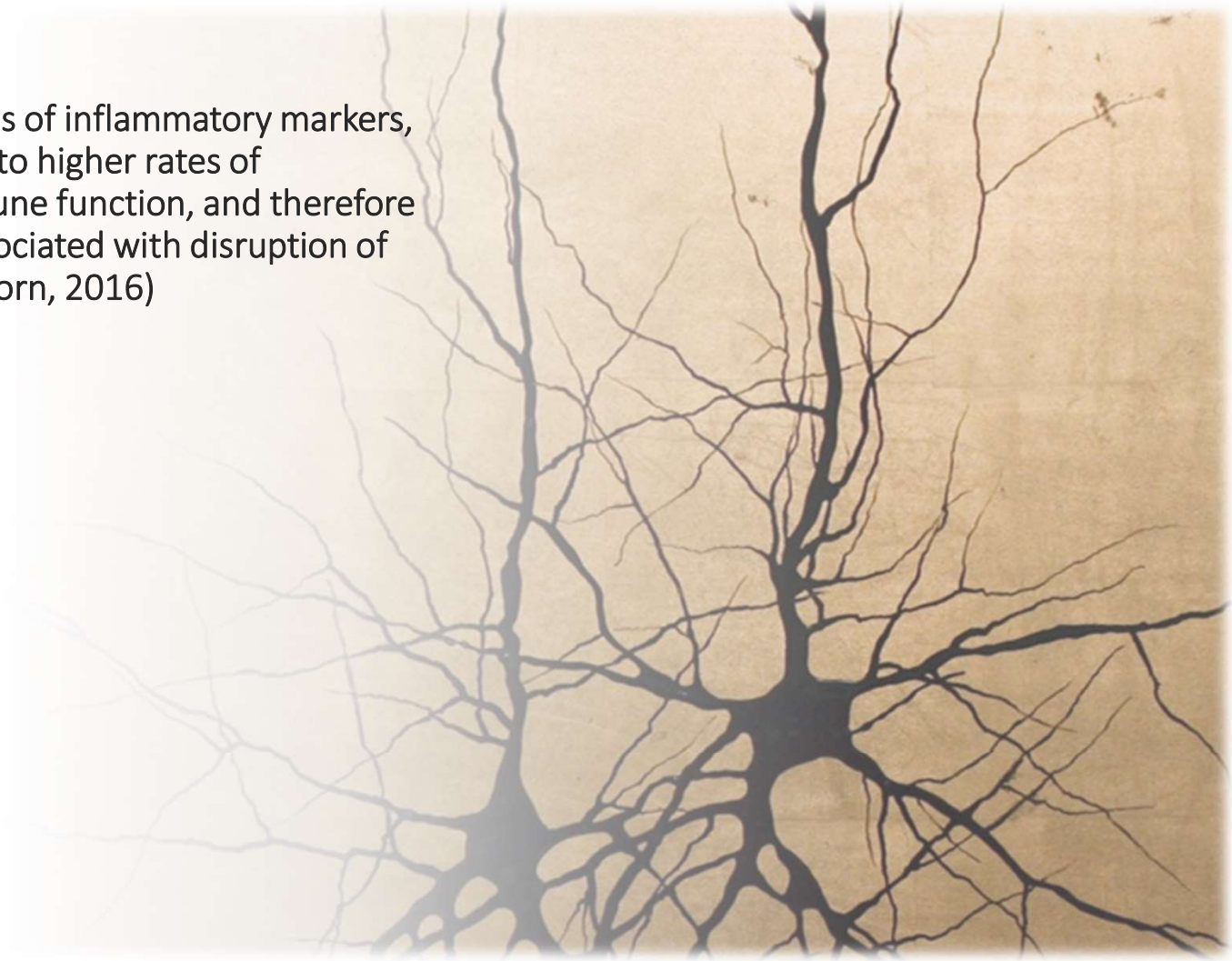
Integrative and Complimentary Approaches

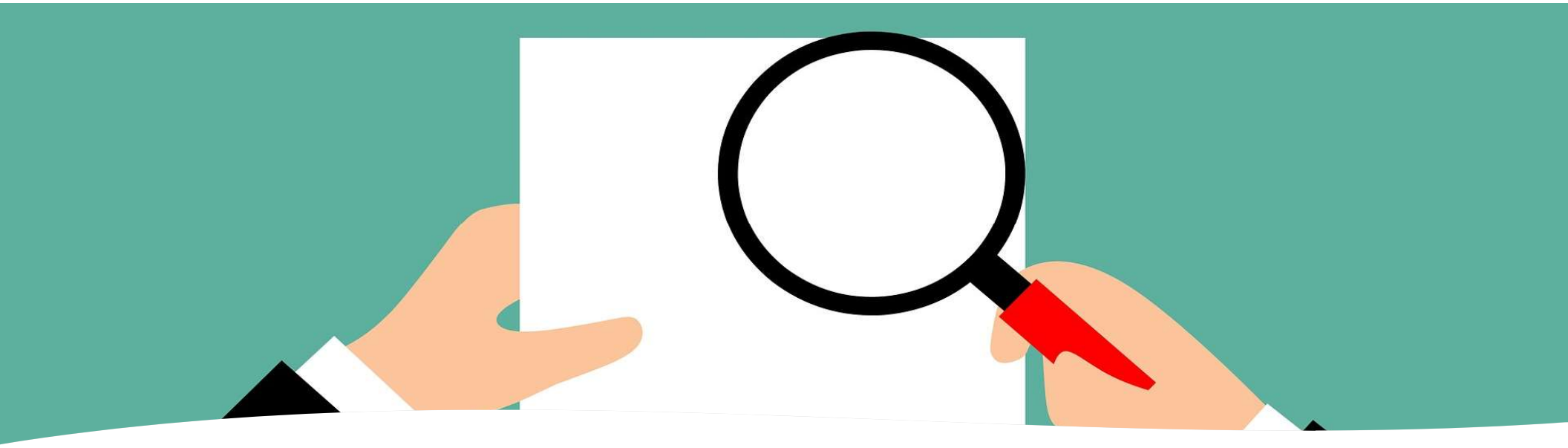
- Nutrition
- Mood stability and blood sugar
- Exercise and Movement
- Gut Health
- Integrative and Somatic Therapies

"People with PTSD have increased levels of inflammatory markers, increased allergies, and are vulnerable to higher rates of autoimmune diseases, depressed immune function, and therefore increased risk of infections. PTSD is associated with disruption of cortisol levels and depletion of NTs." (Korn, 2016)

Goals:

- Reduce inflammation
- Manage stress response
- Balance Circadian Rhythm
- Enhance neurotransmitter function
- Address Epigenetics
    - How nutrition affects gene expression





Assessment

- Bioindividuality: each person is unique
- The individual factors and experiences contribute to treatment approaches
- Integrative assessment
  - Looking for symptoms, additional trauma, medical procedures
  - Also assessing for root causes of symptoms

Circadian Rhythm

- 24-hour light/dark cycle
- Controls release of cortisol and melatonin
- Transmission of light via the eyes to stimulate the hypothalamus & pineal gland

Disruption:

- Implicated in depression, PTSD, and bipolar disorders
- Disrupted circadian rhythm = dysregulated cortisol rhythm = altered sleep pattern and mood
- Trauma and stress disrupt the circadian rhythm

Interventions:

- Light therapy for SAD
- Blue light blocking glasses
- ChronoNutrition
- Direct sunlight in the morning
- Grounding

The Power of Light

- Reduction of blue light
- Increase in the full spectrum of light including near and far infared
- Increase in red light
- Regulation of melatonin
- Regulation of cortisol – mediates stress response
- "…Night time light sends neural signals to the autonomic systems to increase cortisol production from the adrenal gland but not the brain" (Kruse, 2011).

"Cortisol concentrations also follow a circadian rhythm. It is a more complex rhythm than the human melatonin rhythm. Unlike the melatonin rhythm, human cortisol rhythms do not seem to be totally associated with day and night per se but seem to be more closely tied to the "transition periods" from dark to light and to a lesser extent, from light to dark. Transitioning light levels play a tremendous role in cortisol rhythms in humans." (Kruse, 2011)

Sleep

- Getting restful sleep is the foundation
- Bright light before 10am
- Work on regulating circadian rhythm
- Herbs
  - Chamomile
  - Kava
  - Valerian
  - VHP
- Nutrition – sleep supportive foods
  - Cherries/raspberries
  - MCT oil, fish oil, chia seeds
  - Almonds/Walnuts
  - Lean protein
- Magnesium foot soak
- Sleep in complete darkness and in a cool room
- Morning/early afternoon exercise

Calming the Fire: Tips for Reducing Inflammation

Prioritize Gut Health

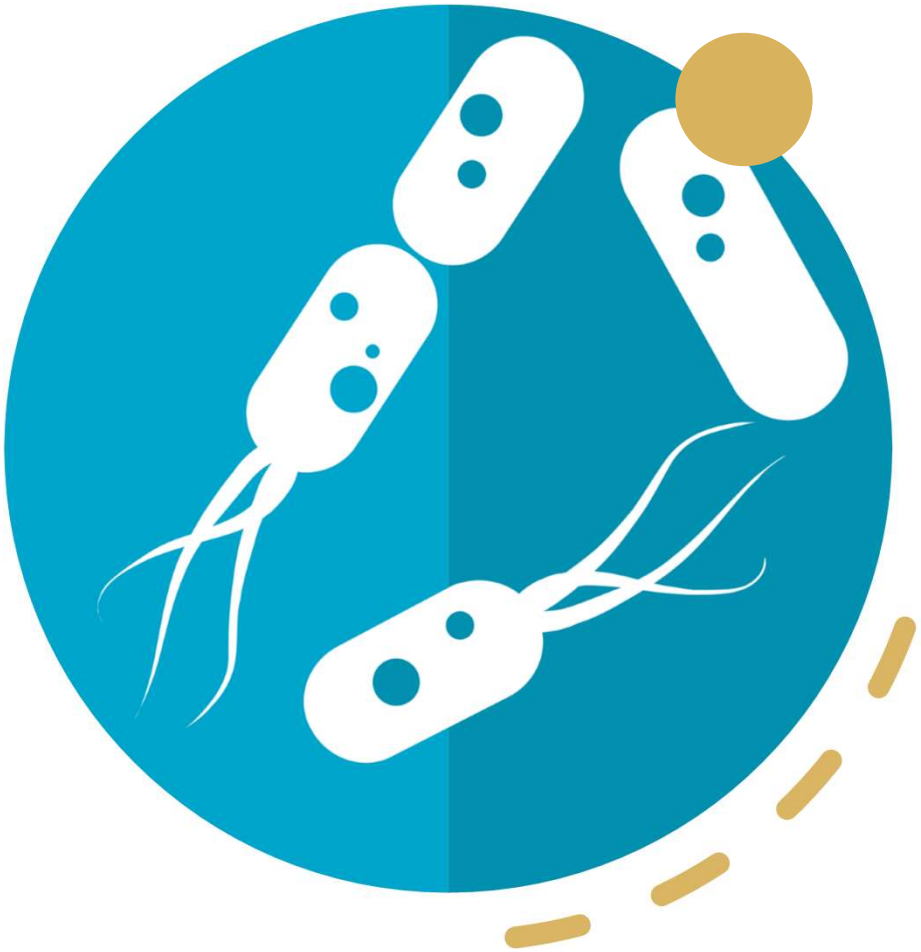
- Fermented foods and diversity in diet
- Rotation of probiotic strains
- Incorporate pre-biotic foods

Reduce Stress

- Increase frequency of self-care
- Consistent meditation practice
- Work/Life Balance

Gut Health and Microbiome

- Gut is known as “the second brain”
- Control’s breakdown and absorption of foods
- Transforms food into chemical messengers that support emotional life
- Microbiome: community of microorganisms including bacteria, fungi, and viruses
- Imbalances in microbiome play a role in pain, stress, and sensory processing that can manifest as chronic fatigue, brain fog, low and high blood pressure, insomnia, hormonal imbalance, mental health symptoms and many more.



Eating and Digestion

Eating and Digestion

- Eating under stress leads to malabsorption = malnourishment
- Chew slowly and completely
- Avoid distractions while eating
- Eat in a relaxed environment – if possible, with other people

Nutrition and the Brain

- Food is made up of carbohydrates, proteins, fats, water, vitamins, and minerals
  - Carbohydrates: Breaks down into glucose
  - Protein: Breaks down into amino acids
  - Fats: Provide energy and lubrication for the brain

Calming the Fire: Tips for Reducing Inflammation

Diet:

- Eat whole foods as much as possible
- Eat organic and grass-fed meat when possible
- Use the ‘Clean Fifteen and Dirty Dozen’ for organic produce
- Avoid seed-based oils
- Increase water intake
- Add in anti-inflammatory teas and herbs like Tulsi, Ginger, and Turmeric
- Anti-inflammatory diets: Mediterranean, Whole30, Paleo, etc.
- Try to avoid gluten and dairy*

Target Nutrition

- Address causes of dis-ease/imbalances
- Food allergy/sensitivity testing
  - Food/mood journal for a week looking at:
    - Energy
    - Symptoms
    - Pain
    - Digestive symptoms
    - Mood
- Remove foods that cause adverse mood or symptoms

Eating for Health

- Mediterranean diet/ Anti-inflammatory diets
- Taste the Rainbow – eat a wide variety of fresh foods in every color
- Carbohydrates that are low-glycemic like brown rice, quinoa, bulgar wheat, beans, sweet potatoes, and squash (nothing white)
- Protein: wild-caught fish and organic grass-fed meat, non-unfermented soy vegetable proteins
- Fats: olive oil, full fat grass fed organic butter, coconut oil, ghee
- Minimize or cut out alcohol all together – red wine is better than any other type
- Dark sugarless chocolate in moderation
- Eat whole foods as much as possible
- Eat organic and grass-fed as often as possible

Foods to Avoid

- Fried food
- Fast food
- Avoid eating pre-made and boxed foods
- Margarine/canola/safflower/soy/corn oils and fake butters
- Foods made from white flour
- Fruit that is canned in sugar
- Farmed Fish
- Pasteurized dairy
- Soy – all forms of soy except those that have been fermented
- Corn syrup/white sugar/fake maple syrup
- Artificial sweeteners

Water

"Dehydration also causes an excessive release of stress hormones, like cortisol, and contributes to food cravings" (Korn, 2017).

- Water should be filtered as well as possible
- Don't leave plastic water bottles in hot places
- Hydration reduces inflammation/bloating
- Calculating how much water to drink – half your body weight in ounces

Exercise

In a study of adults with PTSD, a 12-week exercise program that included three 30-minute resistance training sessions a week, as well as walking, was found to lead to a significant decrease in PTSD symptoms, depression, and better sleep quality after the program ended (Rosenbaum, et al., 2015).

- Increase in BDNF, increased cognitive function
- Healthier way to self-regulate
- Bilateral stimulation
- Regulate Circadian Rhythm
- Mind/Body connection

Lighting the Fire: Underlying Conditions of Inflammation

"SIBO inhibits nutrient absorption and assimilation of the B vitamins folate, B6, B12, resulting in major depression" (Logan & Katzman, 2005)

- Stealth Infections
- Autoimmune conditions
- Environmental toxins
- Low HCI is associated with anxiety
- Avoid food allergies and food and environmental sensitivities
- Treat adrenal fatigue

Reduce Toxin Exposure

"Research reveals that people with the highest levels of pesticide exposure (top 10%) have a frighteningly twentyfold higher risk for diabetes. In fact, body load of pesticides is a better resistor of type 2 diabetes risk than any other factor" (Pizzorno, 2016)

- Household products and cleaners
- Personal care products (hair care, makeup, lotions, toothpaste, etc.)
  - ThinkDirty
  - EWG App
- Consider an air filter

Reduce Toxin Exposure con’t.

- Open windows – indoor air is 100 times more polluted than outdoor air
- Avoid synthetic fragrances (Febreze, fabric softener, candles, perfumes, etc.)
  - Replace with an essential oil diffuser
  - Find non-toxic home spray and perfume alternatives
- Eat organic whenever possible
  - Clean fifteen and the dirty dozen
- Water filter
- Organic grass-fed grass-finished meats and sustainably caught wild seafood

Detoxification

- Infared Sauna
- Red light therapy
- Coffee Enemas
- Castor Oil Packs
- Supplement protocols
- Dry brushing
- Exercise
- Stretching/yoga

Testing/Working with a Medical Provider

- CBC panel
- Hair analysis
- Omega-3 test
- Viral/bacterial infections
- Food sensitivity testing
- 24 hr. diurnal cortisol
- Sensitive C-reactive protein (sCRP)

https://www.ifm.org/find-a-practitioner/

REVIEW

- Incorporate principles of an anti-inflammatory diet
- Increase water consumption
- Decrease toxin and pesticide exposure
- Utilize detoxification strategies
- Address root causes
- Assess for epigenetic barriers
- Get morning sunlight and contact with the ground
- Work with other providers and medical professionals

Somatic Therapies

Somatic Experiencing:

- Completing incomplete motor responses
- Discharging stored energy in the system
- Restore resiliency in the nervous system

Additional somatic therapies:

- Body-Centered Psychotherapy
- Polyvagal Theory
- Hakomi Method
- Sensory Motor Psychotherapy
- Energetic Systems
- Eastern/Western Movement Arts
- The Alexander Technique
- Myofascial release
- Rolfing (Structural Integration)
- Craniosacral therapy

Relationship/Community Support

- Sharing meals with friends and family
  - Sharing meals is part of the Mediterranean diet
- We are a social species – our survival and mental health depend on other human beings

Resources:

- MeetUp
- Taking a class: cooking, art, running, exercise group
- REI has group outdoor adventure trips
- 12-step recovery
- Churches/religious organizations
- Book clubs
- Volunteering

Complimentary Modalities

- Acupuncture
- Bodywork
- Massage
- Yoga
- Float spa
- Sauna

Resources

Books

- When the Body Says No, Gabor Mate
- The Body Keeps the Score, Bessel van der Kolk
- Waking the Tiger, Peter Levine
- The Molecules of Emotion, Candace Pert
- Dirty Genes, Dr. Ben Lynch
- It Didn't Start with You, Mark Wolynn
- My Grandmother's Hands, Resmaa Menakem
- The Good Mood Kitchen, Leslie Korn
- Rhythms of Recovery, Leslie Korn

Websites

- Chronicillnesstraumastudies.com
- Thedoctorskitchen.com

Podcasts:

- DharmaPunx NYC – Josh Korda
- The Doctor's Farmacy – Mark Hyman, M.D.
- Broken Brain Podcast – Dhru Purohit

Thank you!

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