

Trauma-Informed Care Introduction to Central Sensitization

Dyanna Haley-Rezac

PT, DPT, OCS, NCS, FAAOMPT

Doctor of Physical Therapy (DPT)

Board Certified Orthopedic Specialist (OCS)

Board Certified Neurological Specialist (NCS)

Fellow American Academy Orthopedic Manual Physical Therapists (FAAOMPT)

Certified Functional Medicine Practitioner (CFMP)

Certified Golf Fit Instructor – Medical Professional II (CGFI – MP2)

Certified Strength & Conditioning Specialist (CSCS)

CO APTA Rocky Mountain Conference & Exposition
October 12, 2019



1

Dyanna Haley-Rezac PT, DPT, OCS, NCS, FAAOMPT

- Dr. Dyanna Haley-Rezac is a co-owner of Rezac & Associates Physical Therapy since 2009. She specializes in multiple trauma, central sensitization and complex patients from and ortho-neuro-vestibular perspective. Her approach is a biopsychosocial model to treating patients utilizing optimal recovery and interacting collaboratively with other complementary medical professionals to form a comprehensive team approach to patient care. This has led to her working now in functional medicine. Prior military 5 years in the United States Marine Corps.
- Dyanna received her Doctor of Physical Therapy from Slippery Rock University in 2001 and became a Board Certified in Orthopedic Specialist (OCS) in 2007, recertified in 2017 as well as Board Certified Neurological Specialist (NCS) from APTA in 2016. She completed her Fellowship in Manual Physical Therapy from Regis University in 2013.
- Additionally, Dyanna is a Certified Functional Medicine Practitioner, Certified Strength & Conditioning Specialist from NSCA, Certified Golf Fitness Instructor, Medical Professional Level 2 from Titleist and Certified Kinesiotaping Practitioner.
- Dyanna is also an Affiliate Faculty at Regis University and very active with APTA having served as PDC co-chair, SE District Chair and Secretary, and House of Delegates representative.
- She is the recipient of the physical therapist of the year for Colorado 2016 and APTA National Signe Brunstrom APTA Award for Clinical Education 2018.
- dyanna.rezac@rezacpt.com drdyfmp.com rezacpt.com



2

personal & professional journey



3

Objectives



By the end of this session, participants will:

- Identify common signs and symptoms associated with central sensitization.
- Recognize how current pain science interventions can be applied to treat patients with central sensitization.
- Understand the impact of lifestyle factors on chronic pain and inflammation and how this can be applied to improve patient outcomes.

4

My personal objective is to open your mind to why we as a physical therapy profession need to change how we practice



5



we need to understand trauma-informed care in PT?

Physical therapists:

- Touch our patients through manual therapy techniques and mobility facilitation as a regular part of our practice.
- See our patients at their most exposed physically and emotionally.
- Work with our patients one on one in private treatment and hospital rooms as well as in their homes where they may feel more vulnerable.
- Treat areas that are inherently vulnerable and often associated with abuse and physical trauma including pelvic floor, axillary and groin lymphedema, cervical spine and maxillofacial.
- Are in a position of fiduciary responsibility working with patients who are trusting us with their safety when they are not capable of doing this for themselves or when allowing touch or mobility that requires them to relinquish some control.
- Build relationships with our patients with frequent encounters over an episode of care or even multiple episodes of care over years and decades.
- Are treating a much more challenging patient population today with more illness, disability, chronic pain and poorer health than any previous generation.

6

We are learning just how prevalent traumatic events are

• Adverse Childhood Experiences (ACEs)

- 1998 CDC-Kaiser Permanente ACE Study is one of the largest investigations (17,000 subjects) of childhood abuse and neglect and household challenges and later-life health and well-being.
 - >50% reported at least one ACE and 25% reported 2 or more
 - Strong graded relationship between the breadth of exposure (how many ACE events) to abuse or household dysfunction during childhood and multiple risk factors for several health conditions in adulthood (alcoholism, drug abuse, depression, suicide attempts, smoking, poor self-rated health, ≥50 sexual intercourse partners, sexually transmitted disease, physical inactivity, severe obesity, ischemic heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease.) The seven categories of adverse childhood experiences were strongly interrelated and persons with multiple categories of childhood exposure were likely to have multiple health risk factors later in life.
 - 1 event - 2x, 2 events - 4x, 3 events - 12x more likely to have autoimmune diagnosis
- 2012 Philadelphia Urban ACE Survey – recognized the Kaiser study was mostly white, middle class, highly educated aimed to examine an urban city with more racially and socially diverse populations.
 - Found the incidences of ACEs to be much higher than other studies including witnessing violence on a regular basis, being discriminated against, not feeling safe in their neighborhood.
 - >72% reported at least one ACE and 37% had 4 or more

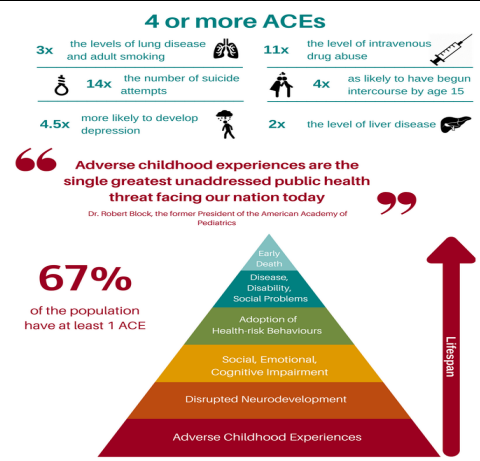
7

Adverse Childhood Experiences

Traumatic events that can have negative, lasting effects on health and wellbeing

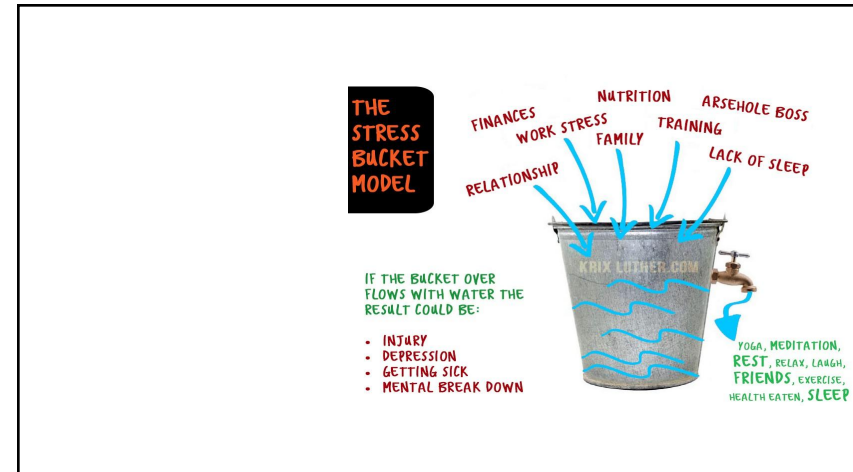


8

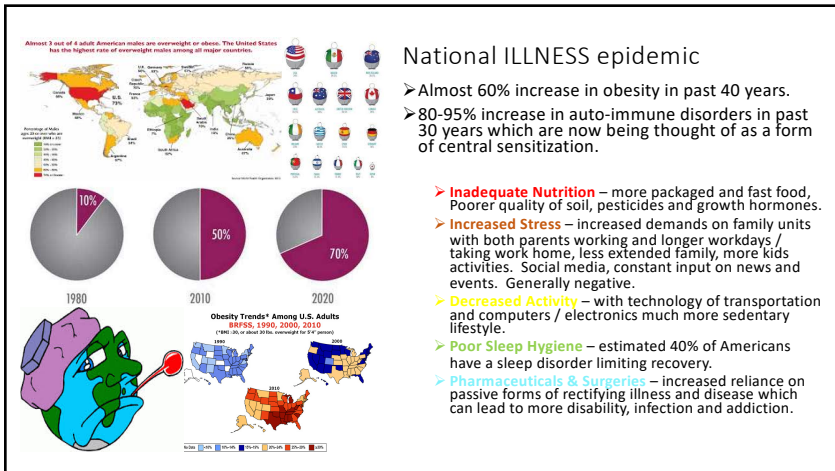




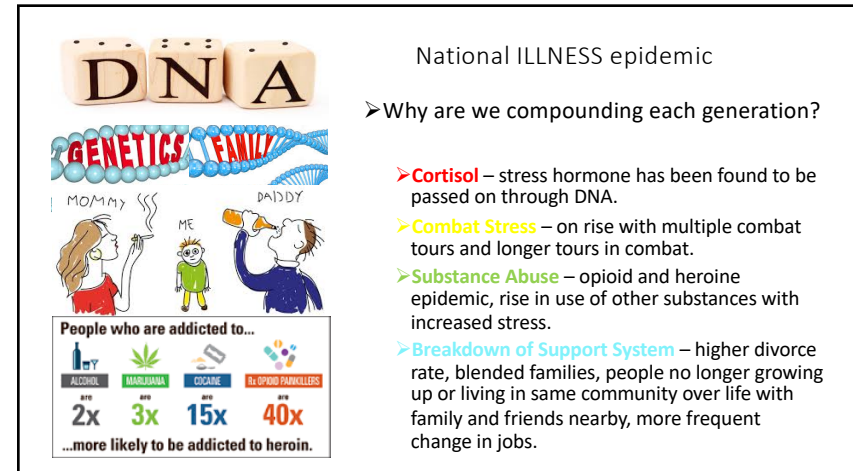
9



10

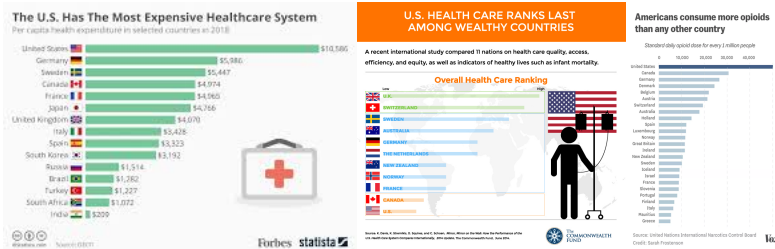


11



12

Our current system isn't working



13

The end of physiotherapy (as we know it)



- Physical Therapy Paradox – it was in the very nature of physiotherapy to overlook the forces that are at the heart of our profession's present problems
 - Focus on the biomechanical body vs. whole person and all the systems involved (neuroimmune, gastrointestinal and limbic systems)
 - Advertise ourselves as "movement specialists" but focus on discreet body parts "regional" interdependence largely adjacent structures/joint above and below and ignoring the cellular microbiological healing and systemic integration
 - Willingly embrace quantitative research but not qualitative
 - Passion for complex anatomical and pathological ideas and turn our professional "nose" up to sociology and philosophy
 - Focus on the technical skill of the therapists and impact on the body without considering mind and spirit
 - Fail to understand our limits on how we think and practice are largely self-imposed
- David Nicholls "The End of Physiotherapy" 2018

14

The beginning of a new way of physiotherapy



It's hard to hear when
OPPORTUNITY
IS **KNOCKING** IF
You are too busy
KNOCKING
THE
OPPORTUNITY

- Understanding how all the systems of the body are impacted by injury and trauma and how the health of those systems influence recovery (neuroimmune, gastrointestinal, limbic)
- Implementing whole person healing from the cellular microbiological/mitochondrial level to the entire system integration understanding of movement.
- Open to accepting and contributing to body of knowledge for qualitative research including case studies and series that better document the complexities of people with chronic pain and trauma and the multiple systems involved in their recovery.
- Embrace the sociological and philosophical sciences including population anthropology.
- Address the impact of the mind and spirit on the function of the body and psychological factors from our experiences in addressing physical symptoms of pain and disease.
- Open our minds to creative new ways of practice that are better at addressing the populations we are serving today in a more cost-effective manner (telehealth, comprehensive home programs, group therapy sessions, addressing the underlying root causes of pain and illness).

15

Medical history



16

What do these diagnoses have in common?

Fibromyalgia
Chronic Fatigue Syndrome
Adrenal Fatigue
 Concussion
Non-Celiac Gluten Sensitivity
 Irritable Bowel Syndrome
 Endometriosis
 Thyroid Disorders
Metabolic Syndrome
 Post Traumatic Stress Disorder
Chronic Lyme Disease
Chronic Regional Pain Syndrome

Adriaan Louw, Pain is Pain 2017

17

What do these diagnoses have in common?



Symptoms:

- ✓ Widespread pain
- ✓ Joint stiffness
- ✓ Fatigue
- ✓ Persistent pain
- ✓ Sleep disturbance
- ✓ Depression
- ✓ Mental fatigue (fog)
- ✓ Short term memory loss
- ✓ Sensitized GI system
- ✓ Immune Function Impaired
- ✓ Anxiety
- ✓ Social impact
- ✓ Functional impact
- ✓ Headaches
- ✓ Sexual dysfunction

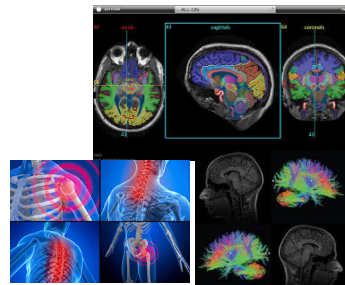
Adriaan Louw, Pain is Pain 2017

18

What do these diagnoses have in common?

Diagnosis:

- ✓ Medical:
 - ✓ Process of elimination
 - ✓ Cluster of symptoms
 - ✓ Limited medical test with positive findings
- ✓ Clinical:
 - ✓ Moves across multiple body areas
 - ✓ Does not correlate with typical joint, soft tissue and neurological distribution characteristics



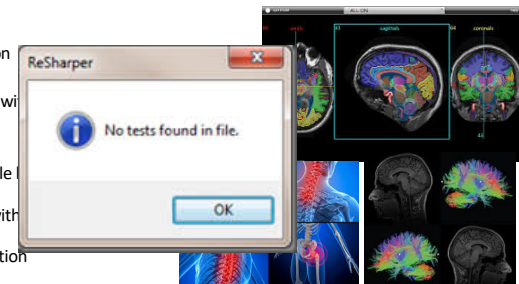
Adriaan Louw, Pain is Pain 2017

19

What do these diagnoses have in common?

Diagnosis:

- ✓ Medical:
 - ✓ Process of elimination
 - ✓ Cluster of symptoms
 - ✓ Limited medical test with positive findings
- ✓ Clinical:
 - ✓ Moves across multiple body areas
 - ✓ Does not correlate with typical joint, soft tissue and neurological distribution characteristics



Adriaan Louw, Pain is Pain 2017

20

What determines their medical diagnosis?



Genetics?
Weakest Link?
First Medical Provider?

21

What is chronic pain?

Pain is “An unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. Pain is always subjective.”

(International Association for the Study of Pain (IASP)).

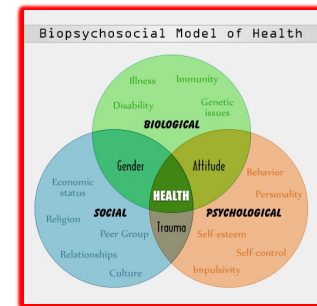
Table 6-1 Healing Rates for Various Tissue Types

| Tissue | Time to Return to Approximately Normal Strength |
|----------|---|
| Bone | 12 weeks |
| Ligament | 40-50 weeks |
| Muscle | 6 weeks up to 6 months |
| Tendon | 40-50 weeks |

See also: Houghton, D. (2002). Soft tissue healing and its impact on rehabilitation. J Sports Rehabil, 1(2): 30-36 and Houghton, D. (2002). Muscle strength and endurance. In Houghton, D. Therapeutic Exercise for Public Health, Champaign, IL: Human Kinetics, pp. 49-70.

Acute Pain is a nociceptive response to thermal, chemical or mechanical stimuli.

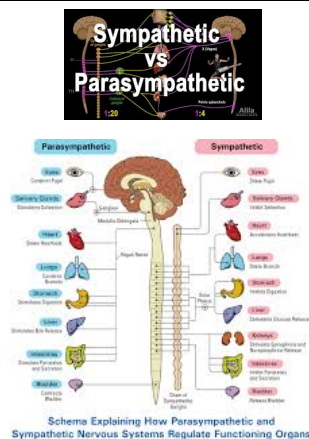
Chronic Pain is Biopsychosocial and is present after tissue healing has occurred as central sensitization.



22

Autonomic nervous system BALANCE

- Parasympathetic is the rest, relax, digest and heal phase. With increase in stress and decrease in rest and proper inputs (nutrition, hydration) this phase is shortened in people with central sensitization leading to impaired respiration, digestion, etc. Affects all aspects of healing.
- Sympathetic is the fight or flight response. Persons who stay in this state become fatigued from overactive nervous system and depleted from lack of healing.
- Needs to be a balance between these two systems.

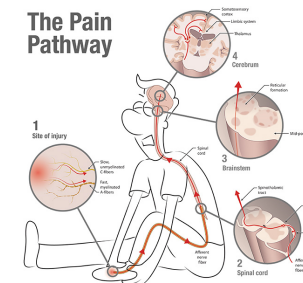


23

Pain nociception

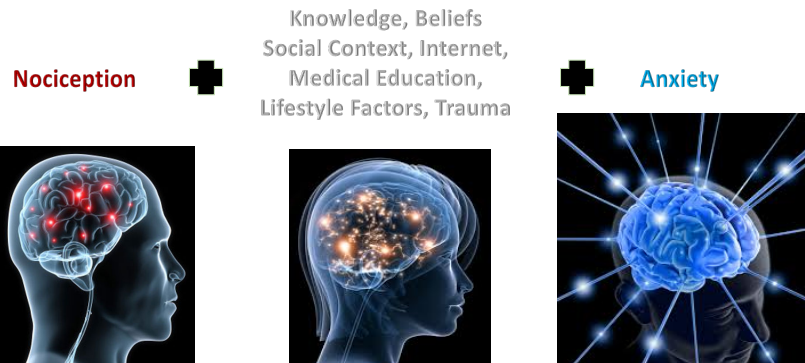
Information about danger to the body is transmitted to the brain via:

- Thermoreceptors (temperature)
- Chemoreceptors (chemicals)
- Photoreceptors (light)
- Mechanoreceptors (pressure)
- Nociceptors??? – previously thought to be a type of receptor for pain. Pain science now is looking at nociception as the brain's interpretation of the information from other receptors based on emotions, experience and perceptions.



24

Pain perception in brain



25

No Brain, No Pain



26

Ce on

| Tissue | Healing Time |
|-------------------|-----------------------------|
| Muscle | Exercise Induced 0 - 3 days |
| | Grade 1 1 - 4 weeks |
| | Grade 2 3 - 12 weeks |
| | Grade 3 1 - 6 months |
| Tendon | Tendonitis 3 - 7 weeks |
| | Tendinosis 3 - 6 months |
| Ligament Sprain | Grade 1 2 - 8 weeks |
| | Grade 2 2 - 6 months |
| | Grade 3 6 - 12 months |
| Meniscus / Labrum | 3 - 12 months |
| Fracture | 6 - 8 weeks |



- Nociceptive pain is interpretation of pain from receptors to acute injury from tissues.
- Neuropathic pain is a complex, chronic pain state that usually is accompanied by tissue injury. With neuropathic pain, the nerve fibers themselves might be damaged, dysfunctional, or injured. These damaged nerve fibers send incorrect signals to other pain centers.
- Central Sensitization pain involves the central nervous system (CNS) which requires less stimuli to evoke pain and thus perceived at a higher level.

<https://www.theacpa.org/conditions/neuropathic-pain>
<https://www.painscience.com/articles/central-sensitization.php>

27

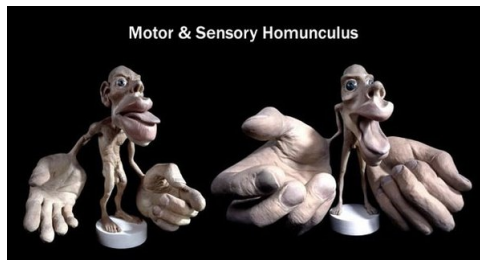
Understanding pain

- The key to treating pain is understanding it
- Acute vs. Neuropathic vs. Central Sensitization
- Physical Therapy techniques to address CNS
- Optimizing Recovery with Lifestyle Factors
- Understanding central / chronic pain can be both hypersensitivity to input as well as long term suppression of warning indicators for danger making this population both high tolerance and low threshold at the same time.

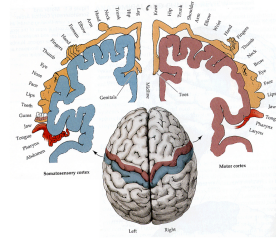


28

Hommunculus



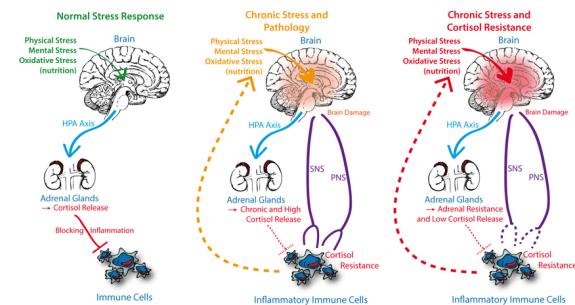
Natural History Museum London



29

hypothalamic pituitary adrenal (HPA) axis and chronic stress

- Normal stress response along HPA axis increases cortisol to block inflammation in immune cells.
- Chronic stress creates chronic cortisol release and inflammation in immune cells creating cortisol resistance.
- Chronic stress and cortisol resistance results in lower cortisol and adrenal resistance resulting in chronic inflammation and pain with adrenal fatigue.



30



Acute vs. chronic Inflammation & pain



- Inflammation occurs in an acute injury to bring neutrophils, eosinophils and macrophages to clean up damage tissue and remove from the body.
- In a chronic state of persistent inflammation, the toxins that aren't being removed rob the body of essential nutrients and create neural irritation which creates more pain leading to more fatigue and more inflammation in a vicious cycle.
- If we look at addressing inflammation from a whole person/multi-system approach to break this cycle, we will be more efficacious in treating and preventing chronic pain.
- We apply this concept readily to acute injuries (ankle sprains) realizing that inflammation impairs proprioception and predisposes us to repetitive injuries, but don't always apply this same mindset to chronic pain and inflammation (thyroid, cardiovascular, Diabetes) which is much more multi-factorial

31

What factors contribute to chronic inflammation (and thus pain)?

- More toxins coming into the cells (which make up every organ in the body) than are being removed = oxidative stress
- Stress
 - Emotional (trauma, relationships, work, news events)
 - Physical (injury, disease/illness, deconditioning, overuse)
 - Environmental (toxins/chemicals in food, air and water, radiation)
- Factors that influence stress
 - How we move (strength, flexibility, aerobic)
 - What we ingest (nutrition/hydration/alcohol)
 - What we breathe (smoke, pollution, pollens)
 - How we regenerate (sleep, mindfulness, rest)
 - How well we live (social support, relationships, positive activities and mindset)
 - How well our basic needs are met (food, shelter, safety)

32

De-catastrophizing words

- The words we use are important and can increase or decrease pain.
- Showing medical images and models can increase pain as can using diagnosis labels.
- Acknowledging that they feel pain is important regardless of origin.
- Words to avoid:
 - PAIN – talking about pain elicits pain
 - THIS MIGHT HURT or THIS MIGHT BE DIFFICULT
 - SHOULD – implies they aren't doing what they need to, inflicts guilt and blame, reinforcing that they are not doing it
 - TRY – implies they start putting some effort
- Words to use:
 - DISCOMFORT, TENSION, FATIGUE (vs PAIN) – expressing what sensation they are actually feeling and noting changes in their body.
 - YOU MIGHT BE SURPRISED AT HOW STARTING SMALL THIS BECOMES EASIER
 - YOU WILL GET STRONGER WITH THIS EXERCISE, ARE YOU NOTICING HOW MUCH BETTER YOU ARE GETTING AT THIS, LOOK AT WHAT YOU WERE ABLE TO DO



33

Verbal and not so verbal communication



What is the patient communicating to you?

- Wincing and withdrawal
- Avoiding eye contact, averting gaze
- Stops talking, looking around
- Speaks more rapidly or slowly
- Agitated, emotional, hesitant
- Fidgeting, nervousness

What are you communicating to them?

- Eye contact, active listening
- Focused on documentation/computer
- Looking at watch/clock
- Empathetic or hurried
- Asking for permission for touch and preferences, input from patient without judgement of always understanding why

34

Motivational interviewing (MI)

- 4 Principles of MI:
 - Express empathy (reflective listening)
 - Empathize, non-judgmental, understanding patient and hearing them. "I am hearing this is too difficult, what if we make it a little easier so that you can be successful with this?"
 - Develop discrepancy (elicit change talk)
 - Define most important goals. Create gap between where the patient is and where she wants to be. Allows the patient to realize current behavior isn't leading to goal and be more open to change. Let the patient present arguments for change.
 - Avoid Argumentation (roll with the resistance)
 - Resistance: what happens when we expect or push for change when the patient is not ready for that change. "Rolling with Resistance" recognizes that simply confronting someone directly may lead people to be defensive or confrontational. Use reflections to help roll with the resistance!!!
 - Support self-efficacy (affirm positives)
 - Self-efficacy: the belief that one can succeed at change. Especially important for patients who have failed numerous treatments, are depressed, hopeless. Build confidence that change is possible. Set small, realistic goals patients can succeed at to enhance self-efficacy. Focus on past successes, changes, and skills and strengths a patient has or can easily learn.



35

Exercise – motion is lotion (usually)

- **Specific exercise** is extremely beneficial to lowering cortisol and sympathetic activity as well as improving neuroimmune function.
- Aerobic exercise can help with detoxification through sweat.
- Need to start low and go slow to not increase inflammation or stress.
- Timing is important. Earlier in day helps with increasing alertness and improving sleep.
- Running, body pump, spinning and other high intensity exercise can perpetuate the sympathetic cycle.
- Cortisol lowering exercise is more beneficial for people with chronic pain, inflammation and stress/anxiety such as walking, yoga, Tai Chi.
- Consider context, if the person was raped by a gang of men, a public gym may not be the best option, walking with a security dog might be a better choice.
- Just because the can, doesn't mean they should!



36

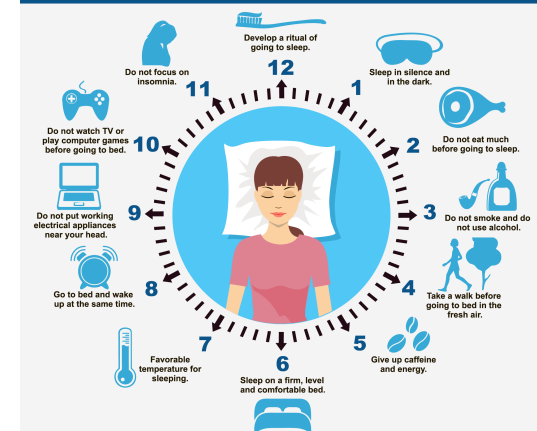
SLEEP HYGIENE

- Estimated 40% of Americans have a sleep disorder.
- Sleep is our rest and restore time that needs to occur every day to repair DNA damage.
- Significant increase in diseases such as cancer, cognitive decline and auto-immune are correlated with 6 hours per night or less over extended periods of time.
- Sleep needs to be a HIGH priority when dealing with chronic pain and part of every patient's education.



37

RULES OF HEALTHY SLEEP



38



CUT THE CRAP

- The first step is to stop throwing gasoline on the fire. Our Standard American (SAD) diet is contributing to us being overfed, undernourished and the inflammatory/pain cycle.
- Foods to avoid:
 - Refined white flour
 - Sugar (yes, all of it including artificial) especially refined sugars
 - Processed/package foods and meats
 - Fruit juices, sodas, packaged beverages
 - Trans fats
- Foods to limit:
 - Red meats
 - Night shade vegetables
 - Saturated and mono-unsaturated fats
 - Gluten, if have a sensitivity
 - Omega 6 – need to have balance with Omega 3
 - Coffee and other caffeinated beverages
- Avoid high heat, quick cooking, microwave and frying



Telling someone with obesity to get healthy options at McDonald's is like telling an alcoholic to get water at a liquor store



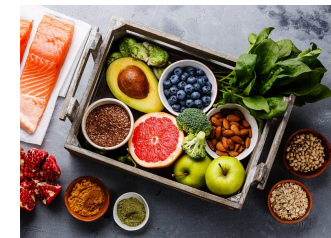
39

Let food be thy medicine and medicine be thy food



Eating anti-inflammatory foods is imperative to healing chronic pain. People with chronic illness need more nutrients to heal than a person maintaining a healthy microbiome.

- **Berries** – Strawberries, Blueberries, Raspberries, Blackberries
 - Berries provide antioxidants known as anthocyanins. These compounds may reduce inflammation, improve NK cell activity, boost immunity and reduce your risk of heart disease.
- **Fatty Fish** – Salmon, Sardines, Herring, Mackerel, Anchovies
 - Fatty fish hold high amounts of the omega-3 fatty acids EPA and DHA, which have anti-inflammatory effects.
- **Broccoli** –
 - Rich in sulforaphane, an antioxidant that fights inflammation by reducing your levels of cytokines and NF-kB, which drive inflammation.
- **Avocados** –
 - Offer various beneficial compounds that protect against inflammation and may reduce your cancer risk.



40



- **Green Tea** -
 - High EGCG content reduces inflammation and safeguards cells from damage that can lead to disease.
- **Chili peppers and bell peppers** -
 - Rich in quercetin, sinapic acid, ferulic acid and other antioxidants with strong anti-inflammatory effects.
- **Edible mushrooms** -
 - Boast compounds that may decrease inflammation. Eating them raw or lightly cooked may help you reap their full anti-inflammatory potential.
- **Grapes** -
 - Several plant compounds in grapes, including resveratrol, can reduce inflammation. They may also reduce your risk of several diseases.
- **Turmeric** -
 - Boasts a powerful anti-inflammatory compound called curcumin. Eating black pepper with turmeric can significantly enhance the absorption of curcumin.



41



- **Extra Virgin Olive Oil**
 - Provides powerful anti-inflammatory benefits, which may reduce your risk of heart disease, cancer and other serious health conditions.
- **Flavanols - dark chocolate and cocoa**
 - Can reduce inflammation. They may also reduce your risk of several diseases.
- **Tomatoes**
 - Are an excellent source of lycopene, which may reduce inflammation and protect against cancer.
- **Sweet and Tart Cherries**
 - Contain antioxidants that reduce inflammation and your risk of disease.
- **Veggies & Fruits** - should be the majority of your diet from all colors every day
 - Excellent source of nutrients and fiber to reduce inflammation.
- Choose foods that are organic, Non-GMO grass fed, wild, in their natural form and whenever possible locally sourced.



42

Healthy Hydration



hydration

- Every cell, tissue, and organ in your body needs water to work properly. Your body uses water to maintain its temperature, remove waste, and lubricate your joints.
- Lack of hydration makes detoxification more difficult and can increase inflammation which impacts joints, muscles, connective tissues, vital organs including your brain and thus significantly contributes to chronic pain.
- Adding fruit to water helps with flavor and provides valuable nutrients.
- General rule: Drink in ounces $\frac{1}{2}$ your body weight in lbs.



43

Mindfulness and spirituality

- Finding calm and restoration is imperative to healing and treating people with trauma and chronic pain:
 - Social support network
 - Spirituality (religious or energy)
 - Being present and connected
 - Finding the positive in each day/moment
 - Practice of relaxation and breathing
 - Enjoyment in each day
 - Gratitude



44



WHAT IS WITHIN THE SCOPE OF PHYSICAL THERAPISTS?

- All modifiable lifestyle factors which you have knowledge and recognizing when to refer to another professional

45

what's coming next?

Physical therapy pain neuroscience interventions for working with patients with persistent pain and central sensitization from trauma and chronic illness:

- Neurodynamics (nerve glides/slides, neuromobilization activities – yoga/tai chi)
- Breath work
- Sensory Integration (weighted blankets, tactile inputs, tracing body, vibration)
- Mirror therapy
- Lateralization
- Mental imagery/Visualization
- Meditation / Mindfulness



46

Questions?

Dr. Dyanna Haley-Rezac
PT, DPT, OCS, NCS, FAAOMPT, CFMP, CSCS, CGFI-MP2
Functional Medicine Physical Therapist

Dyanna.Rezac@rezacpt.com
Drdyfmppt.com



47

RELEVANT Literature

- Nicholls, D. 2018. The End of Physiotherapy. New York, NY: Routledge.
- Louw A. Pain is Pain: Treat the Patient, not the Label. Combined Sections Meeting APTA 2017.
- Louw A, Puentedura EJ, Zimney K, Schmidt S. Know Pain, Know Gain? A Perspective on Pain Neuroscience Education in Physical Therapy. The Journal of orthopaedic and sports physical therapy. Mar 2016;46(3):131-134.
- Moseley GL, Butler DS. Fifteen Years of Explaining Pain: The Past, Present, and Future. The journal of pain : official journal of the American Pain Society. Jun 5 2015.
- Hoeger Bement MK, Sluka KA. The current state of physical therapy pain curricula in the United States: a faculty survey. The journal of pain : official journal of the American Pain Society. Feb 2015;16(2):144-152.
- Cox T, Puentedura E, Louw A. An Abbreviated Therapeutic Neuroscience Education Session Improves Pain Knowledge in First Year Physical Therapy Students But Does Not Change Attitudes or Beliefs Journal of Manual & Manipulative Therapy. 2015;Accepted for Publication - Nov 2015.

48

RELEVANT Literature

- Latimer J, Maher C, Refshauge K. The attitudes and beliefs of physiotherapy students to chronic back pain. *Clinical Journal of Pain*. 2004;20:45-50.
- Dean, E. Physical therapy in the 21st century (Part I): Toward practice informed by epidemiology and the crisis of lifestyle conditions. *Physiotherapy Theory and Practice*, 25(5–6):330–353, 2009
- Allegrante JP, Perterson JC, Boutin-Foster C, Ogedegbe G, Charleson ME 2008 Multiple health-risk behavior in a chronic disease population: What behaviors do people choose to change? *Preventive Medicine* 46: 247–251
- Felitti, V et al. Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults. *American Journal of Preventive Medicine* in 1998, Volume 14, pages 245–258.

49

RELEVANT RESOURCES

- <https://www.healthline.com/nutrition/13-anti-inflammatory-foods#section13>
- https://creakyjoints.org/education/arthritis-diet/?gclid=EAlaIqObChMI_7rs9v6n4QIVFsNkCh3-EgwaEAAAYAiAAEgJCVfD_BwE
- <http://sleepeducation.org/essentials-in-sleep/healthy-sleep-habits>
- <http://healthysleep.med.harvard.edu/healthy/getting/overcoming/tips>

50