MIND-BODY MEDICINE-BASED RELAPSE PREVENTION FROM ADDICTIONS

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The Center for Mind-Body Medicine

The speaker is not speaking on behalf of United Healthcare, Optum or related agencies.
There is no relation with the pharmaceutical industry.

Scope of the Problem

In 2016, 48.5 M people in the US age 12 and older (18%) reported illicit and/or prescription drug use in the last year (CDC 2018).

570,000 people die annually in the U.S. due to drug use.

480,000 deaths are due to tobacco use.

31,000 are due to alcohol use.

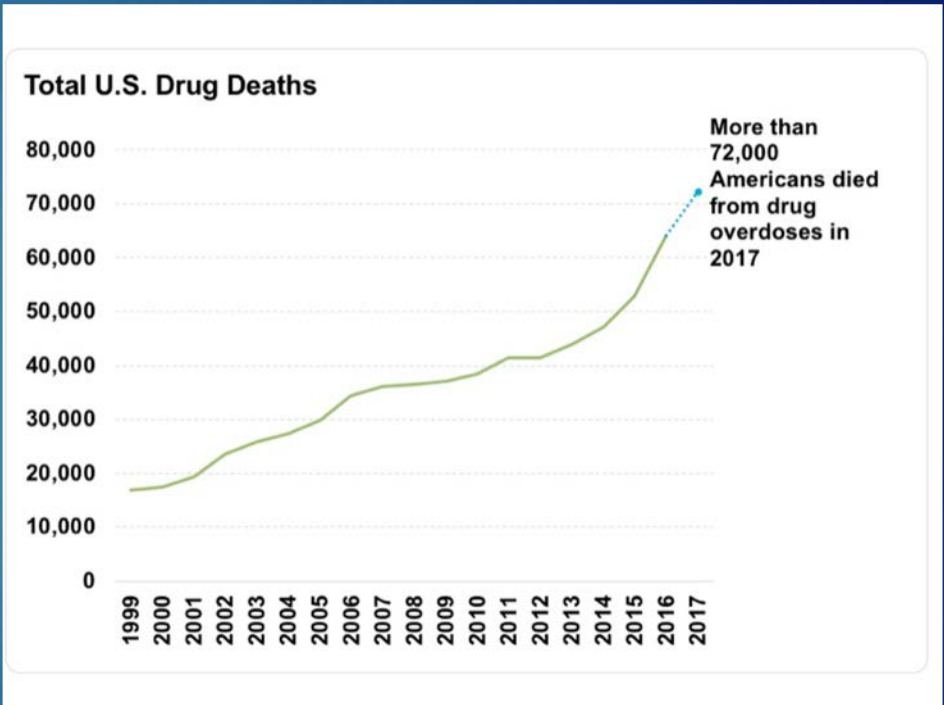
64,000 people die from overdosing on illicit drugs and prescription medications (NIH 2016).

CDC (2018). Drug Surveillance Report of Drug-Related Risks and Outcomes. https://www.cdc.gov/drugoverdose

Epidemiology of DSM-V SUDs: Prevalence

2016 Nat. Epidem. Survey on Alcohol and Related Conditions

- SUDs 12% men, 8% women
- Native-American 17%, Caucasian 11%, African-Am 10%, Hispanic 7%
- Accidental drug overdose is the leading cause of death under 50.



Grant, BF. et al (2016). Epidemiology of *DSM-5* drug use disorder: Results from the National Epidemiologic Survey on Alcohol and Related Conditions–III. *JAMA Psychiatry*, *73*(1), 39–47.

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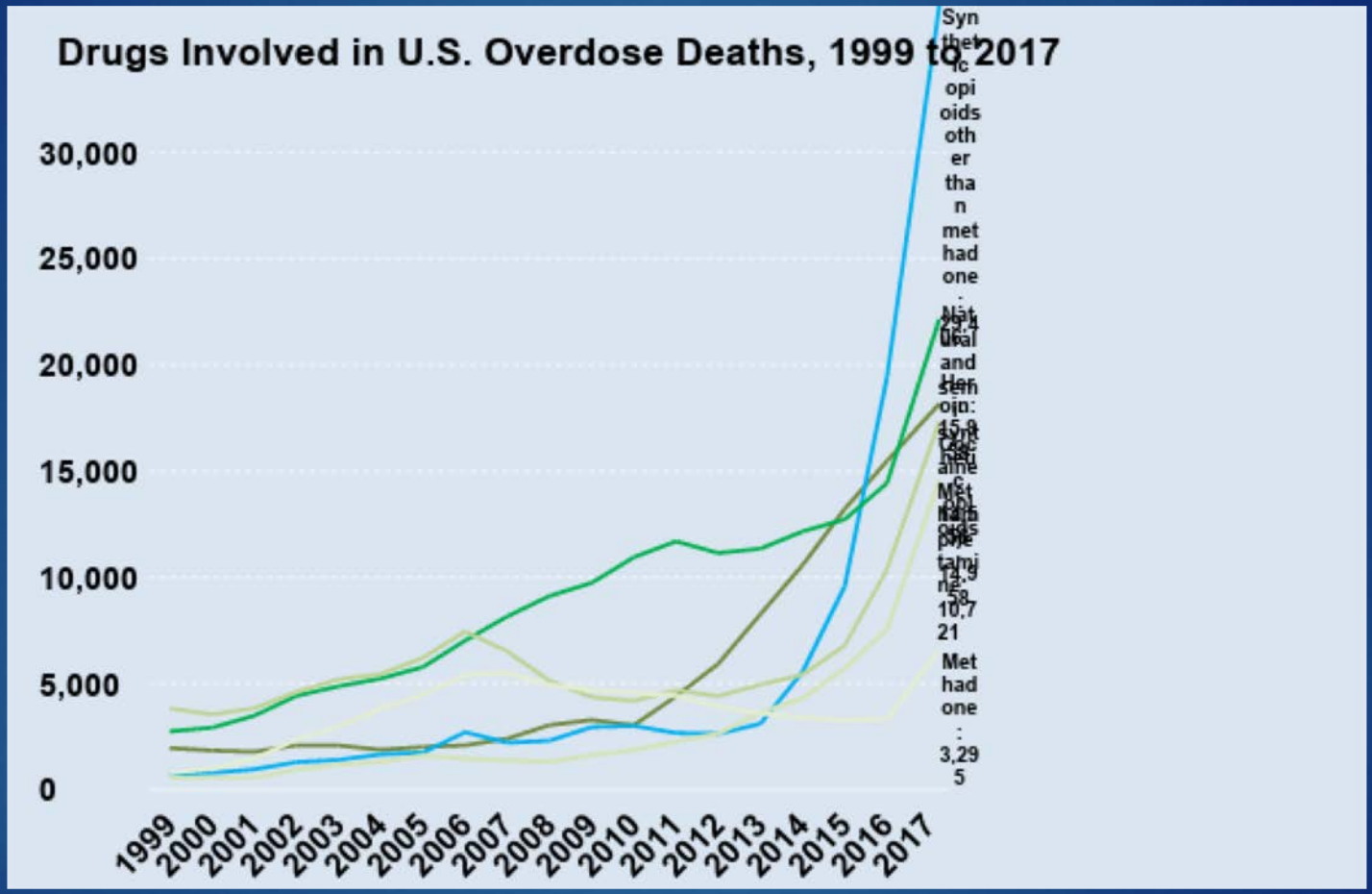


Source: CDC Wonder (2017). CDC Drug Surveillance Report (2018).

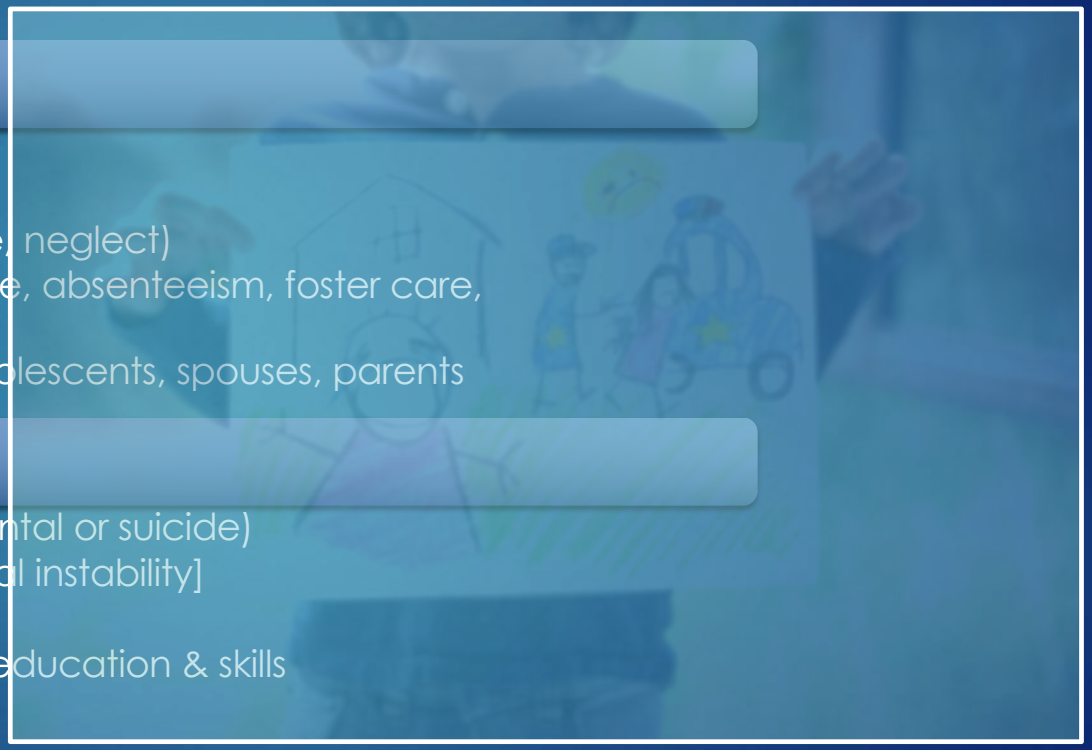
Family & Social Aspects of SUDs

Effects on Family

- Emotional
- Economic
- Distress (incl. violence, abuse, neglect)
- Instability (separation, divorce, absenteeism, foster care, incarceration)
- Effects on fetus, children, adolescents, spouses, parents

Social Effects

- Disability and death (accidental or suicide)
- Criminal behavior [JC political instability]
- Homelessness
- Unemployment and lack of education & skills



Daley DC. *J Food Drug Anal.* 2013; 21(4): S73-S76

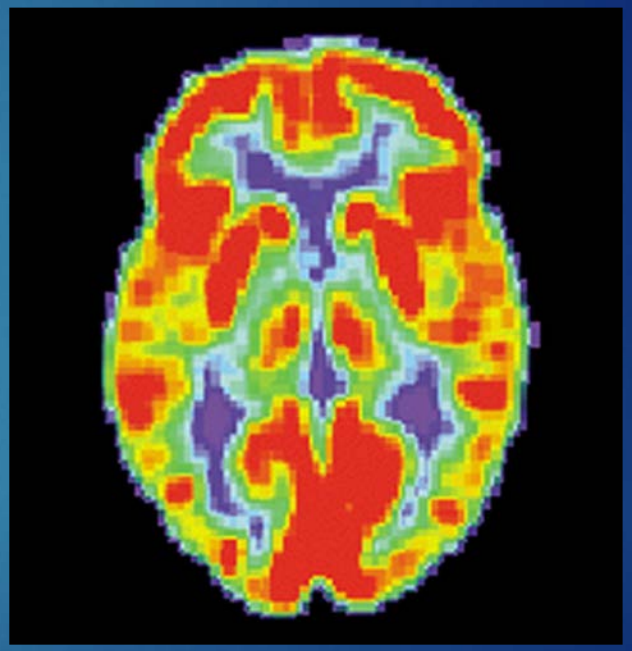
Objectives

1. Review current epidemiological data on addictions
2. Review neurological and physiological mechanisms pertinent to both addictions and mind-body medicine
3. Define mind-body medicine
4. Discuss evidence-based psychosocial interventions for relapse prevention and recovery emphasis on mind-body medicine
5. Discuss next steps in mind-body medicine

What Is an Addiction?

Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations.

Compulsive use of a substance and/or behavior despite harmful consequences.



ASAM (2011). Definition of addiction.
https://www.asam.org/docs/default-source/public-policy-statements/1definition_of_addiction_long_4-11.pdf?sfvrsn=a8f64512_4

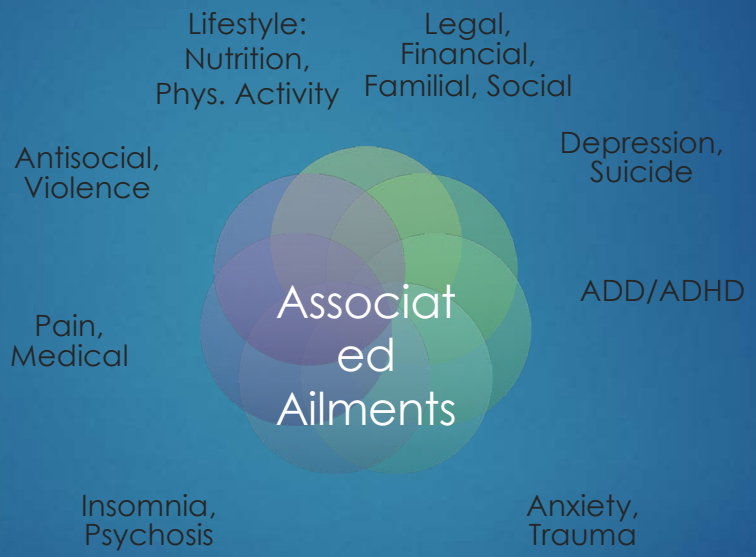
Substance Use Disorder (DSM-V)

A minimum of 2-3 criteria is required for a mild substance use disorder diagnosis, while 4-5 is moderate and 6-7 is severe (APA 2013).

1. Taking the substance in larger amounts and for longer than intended
2. Wanting to cut down or quit but not being able to do it
3. Craving or a strong desire to use
4. Spending a lot of time obtaining the substance
5. Repeatedly unable to carry out major obligations at work, school or home due to substance use
6. Continued use despite persistent or recurring social or interpersonal problems caused or made worse by substance use
7. Stopping or reducing important social, occupational or recreational activities due to substance use
8. Recurrent use of substance in physically hazardous situations
9. Consistent use despite acknowledgment of persistent or recurrent physical or psychological difficulties from using opioids
10. Tolerance
11. Withdrawal

Green: Biological Red: Psychological Blue: Social

SUDs Comorbidities



Daley DC. *J Food and Drug Analysis*, 21(4): S73-S76; Emmerik-van O et al *Addiction*, 109(2): 262-272.
Hartz SM et al. *JAMA Psychiatry*, 71(3):248-254; Conway KP et al *J Am Ac Child Adolescent Psychiatry*, 55(4): 280-288

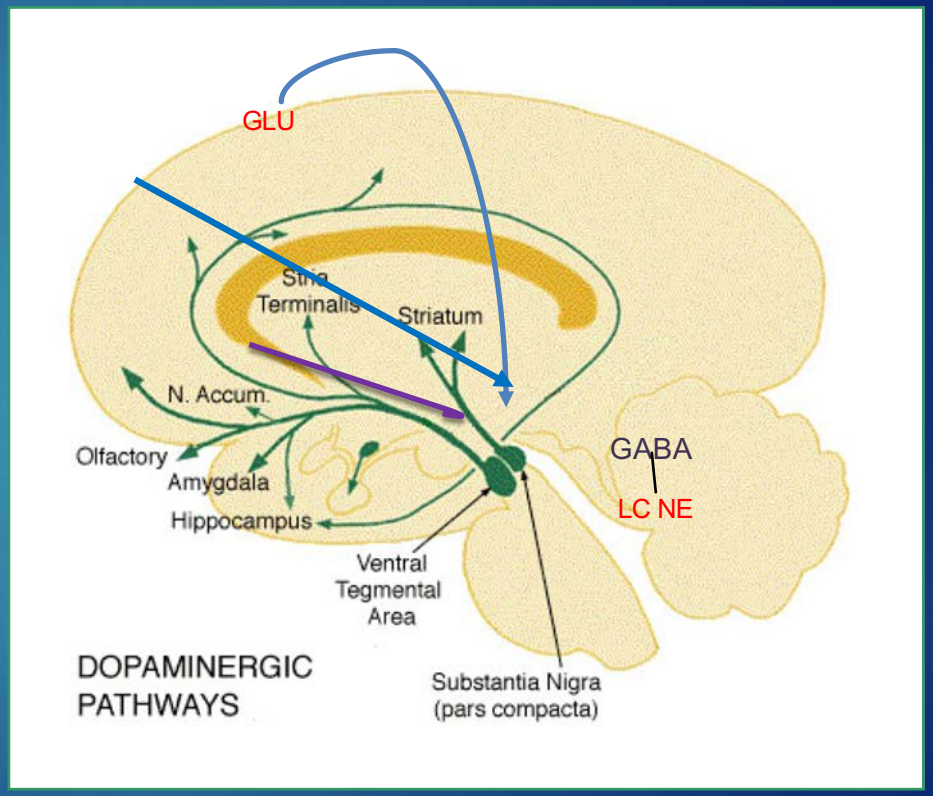
Socio-Ecological Lens: Risk & Protective Factors

Risk Factor	Domain	Protective Factor
Early aggression, impulsivity	Individual	Self-control
Poor social skills	Individual	Positive relationships
Lack of parental supervision	Family	Parental monitoring and control
Substance abuse	Peers	Academic competence
Drug availability	School	Anti-drug use policies
Poverty	Community	Strong neighborhood attachment

Baler RD et al (2011). *Am Academ Child Adolesc Psych* 50(4): 329-339

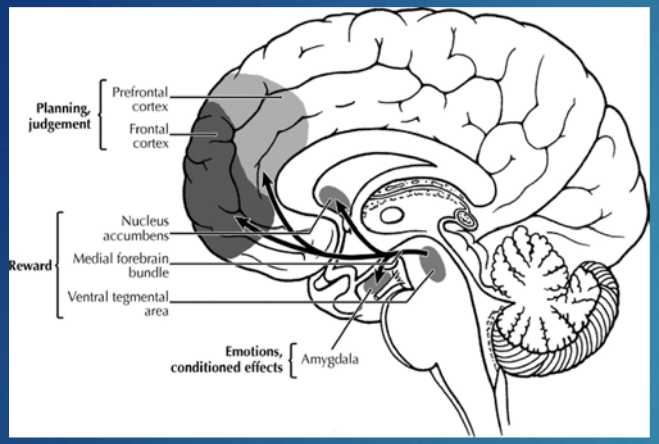
Addiction Neurocircuitry

1. Reward-motivation
2. Anti-reward-stress
3. Attachment-endorphin-oxytocin
4. Fronto-limbic regulation
5. Memory systems–survival



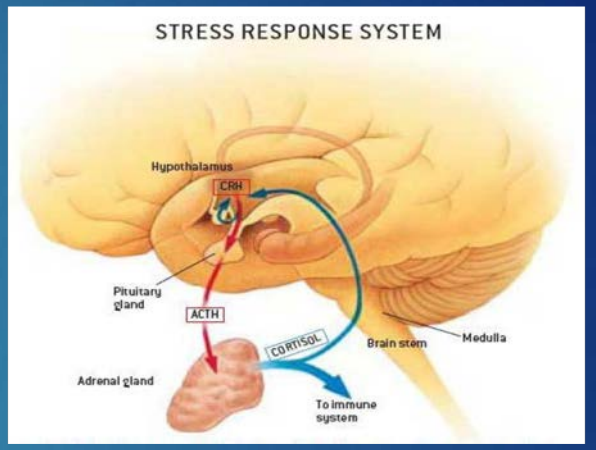
Volkow ND (2012). *Ann Rev Pharmacol Tox*. 52: 321-336.
Mate G (2010). *In the Realm of Hungry Ghosts.* North Atlantic Books Berkeley, CA.

Reward & Anti-Reward (Addictions)
Pleasant & Unpleasant Arousal (Traumatic Stress)



REWARD SYSTEM

- NE, DA, glutamate, endorphins, oxytocin, 5HT
- Sports, sex, social bonding, food, x-treme sports, drugs

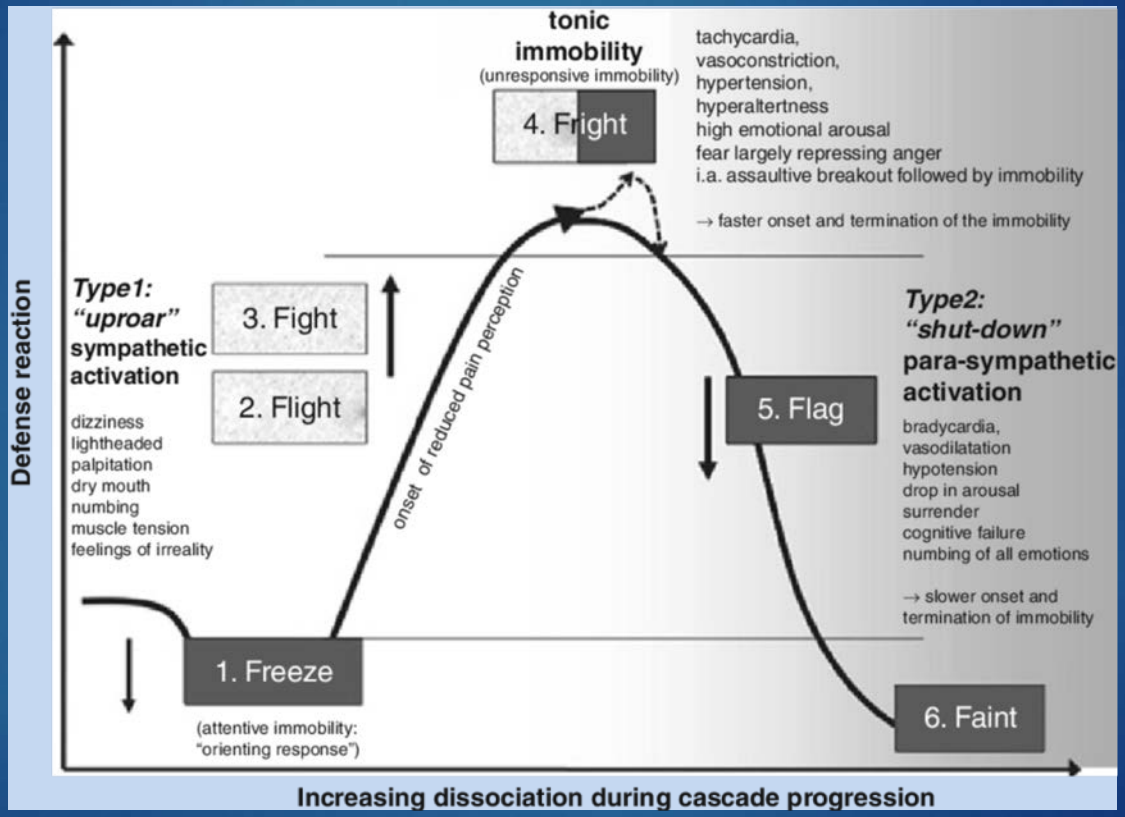


ANTI-REWARD SYSTEM

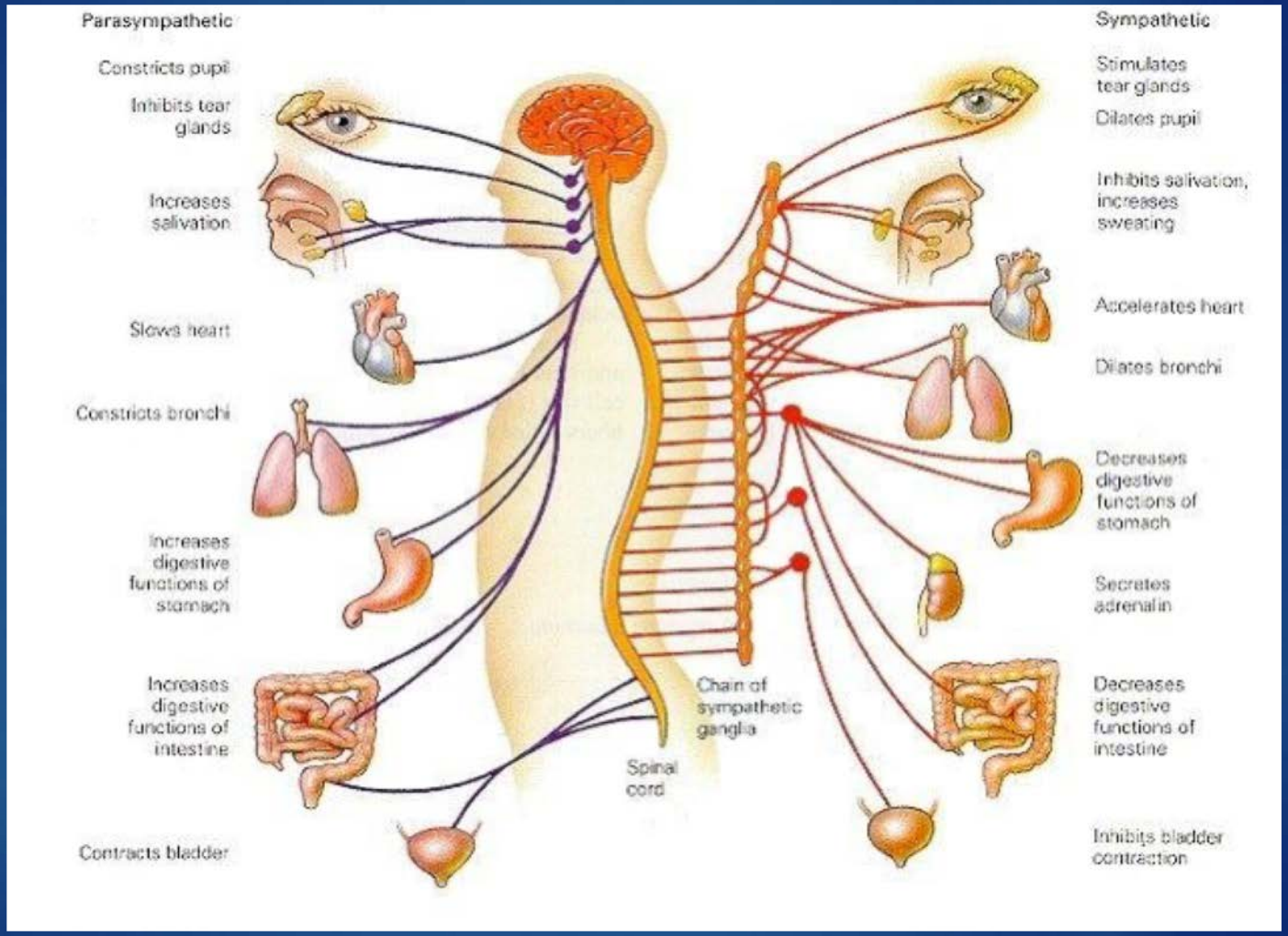
- NE, DA, Glutamate, vasopressin, cortisol Orexin, Substance P
- Danger, threat, trauma, drug use
- Fight or flight

Koob, G. F., & Le Moal, M. (2005). *Nature neuroscience*, *8*(11), 1442-1444.

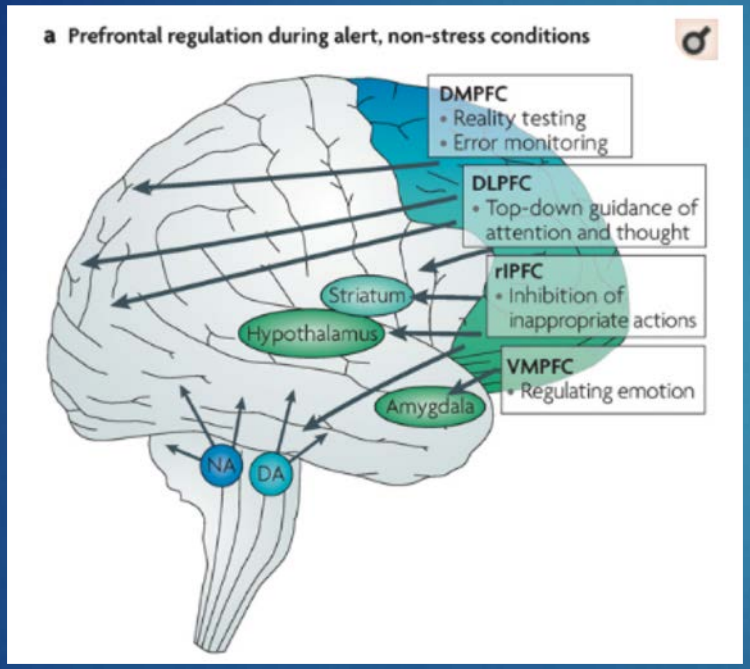
Stress Response

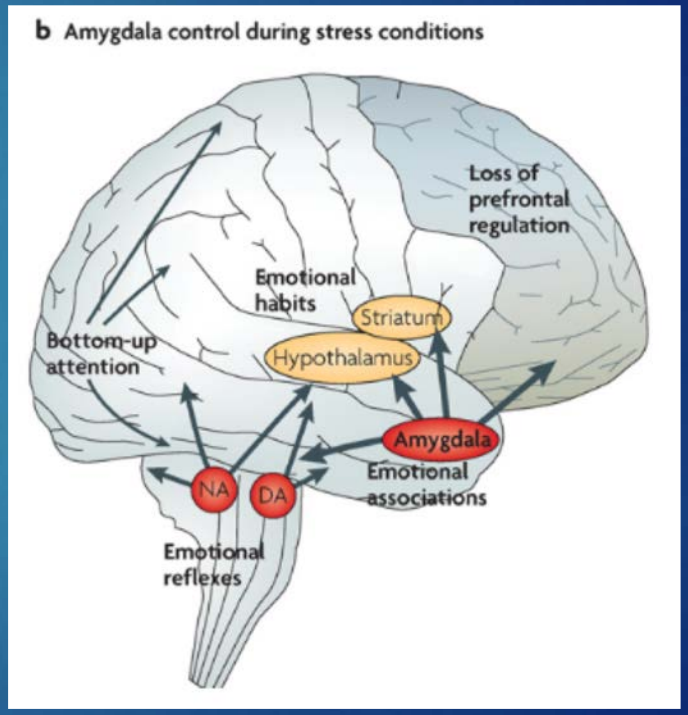


Bracha HS et al. *Clin Autonomic Res.* 15(3): 238-241.


Parasympathetic
Constricts pupil
Inhibits tear glands
Increases salivation
Slows heart
Constricts bronchi
Increases digestive functions of stomach
Increases digestive functions of intestine
Contracts bladder
Sympathetic
Stimulates tear glands
Dilates pupil
Inhibits salivation, increases sweating
Accelerates heart
Dilates bronchi
Decreases digestive functions of stomach
Secretes adrenalin
Decreases digestive functions of intestine
Inhibits bladder contraction
Chain of sympathetic ganglia
Spinal cord

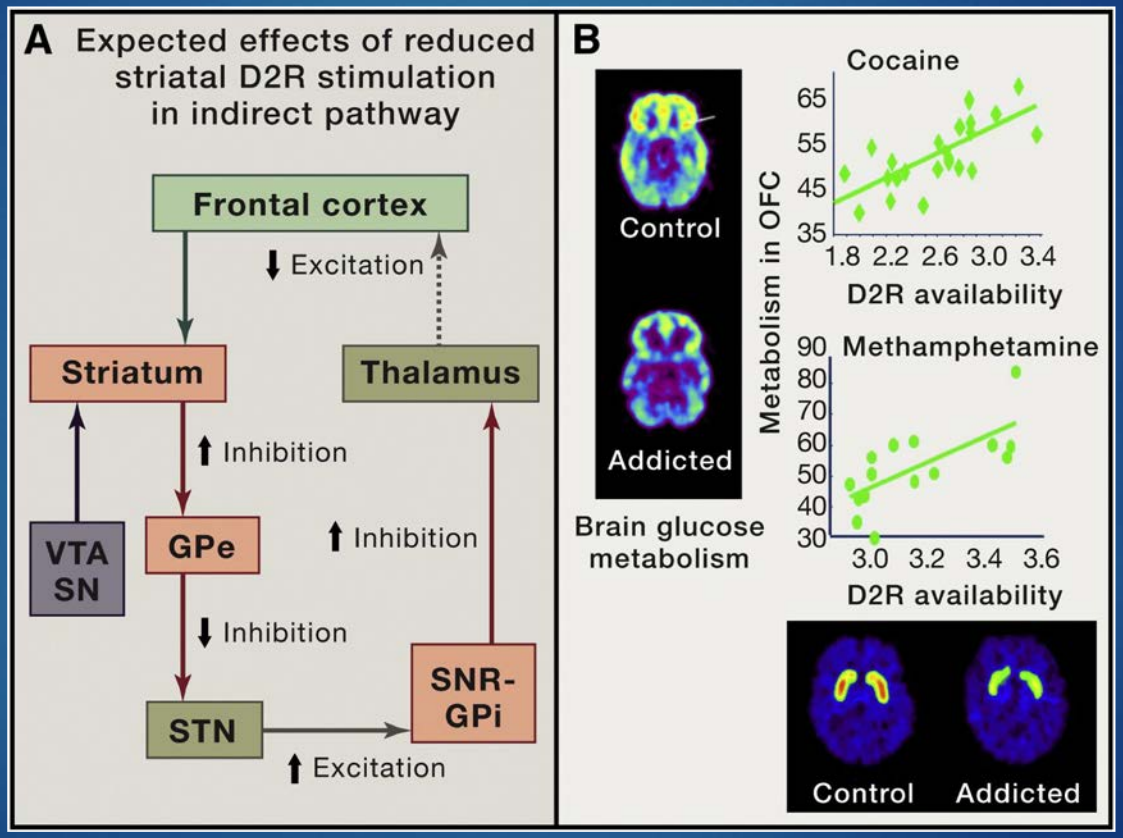
Stress Signaling Pathways That Impair Prefrontal Cortex Structure & Function





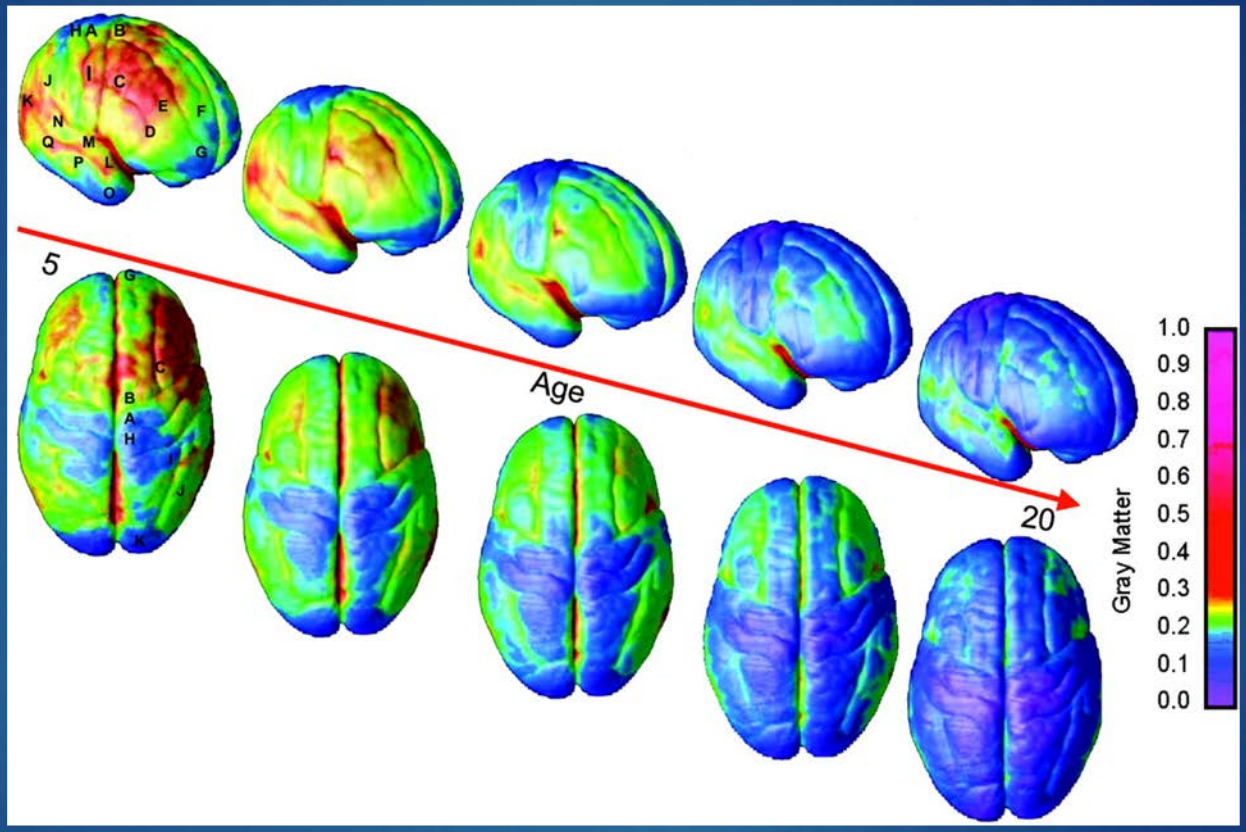
Arnsten, A.T (2009). *Nature Reviews. Neuroscience*, *10*(6), 410–422.

Cortico-Striatal Circuitry Dysregulation in Addictions



Volkow, N., & Morales, M. (2015). The brain on drugs: From reward to addiction. *Cell, 162*(4), 712-725.

Right lateral and top views of the dynamic sequence of GM maturation over the cortical surface.



Nitin Gogtay et al. PNAS 2004;101:21:8174-8179

PNAS

Addiction Process: Triggers

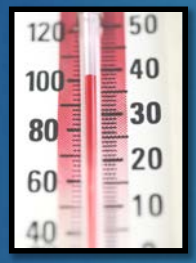
Liking the Drug → Wanting the Drug → Needing the Drug

Substance Delivery

Emotional Barometer

Can't Handle It

Can Handle It



Neurocircuitry
Genes
Metabolism

Reward
Pleasure
Reduced
Distress

↑Reward
↓Anti-reward

Emotional &
Physiological
Triggers

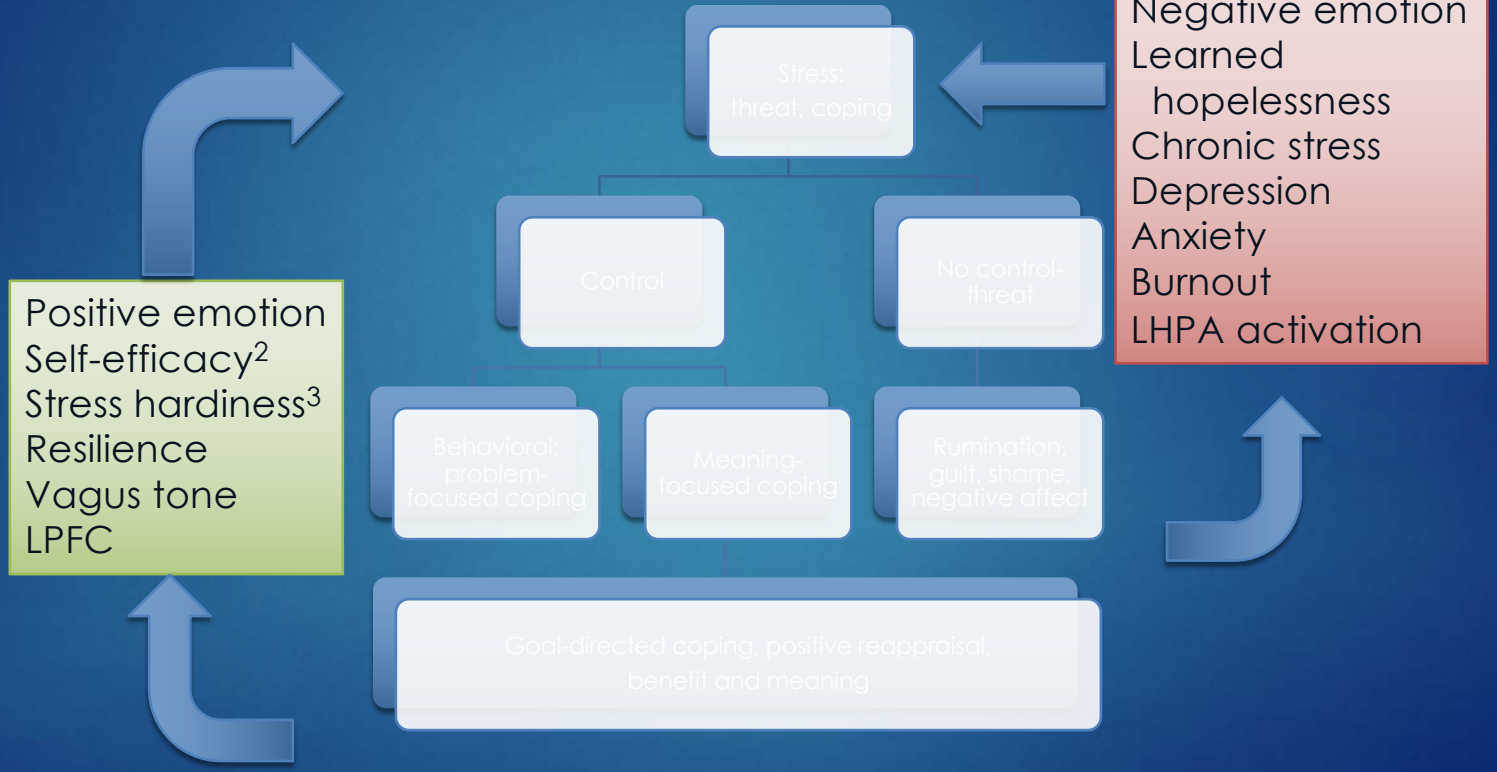
- Restless
- Irritable
- Discontent
- Withdrawal

Psycholo-
gical
distress

- Guilt
- Remorse
- Resentment
- Self-pity
- Fear
- Anxiety

Craving

Stress and Coping Theory:
Cognition, Coping, Appraisal & Thriving



Lazarus 1984; Bandura 1977; Kobasa 1982

How Does Mindfulness Meditation Work?

Proposing Mechanisms of Action from a Conceptual & Neural Perspective

Emerging evidence that mindfulness meditation has the potential to ameliorate negative outcomes resulting from deficits in self-control by regulating the same core regions in addictions.

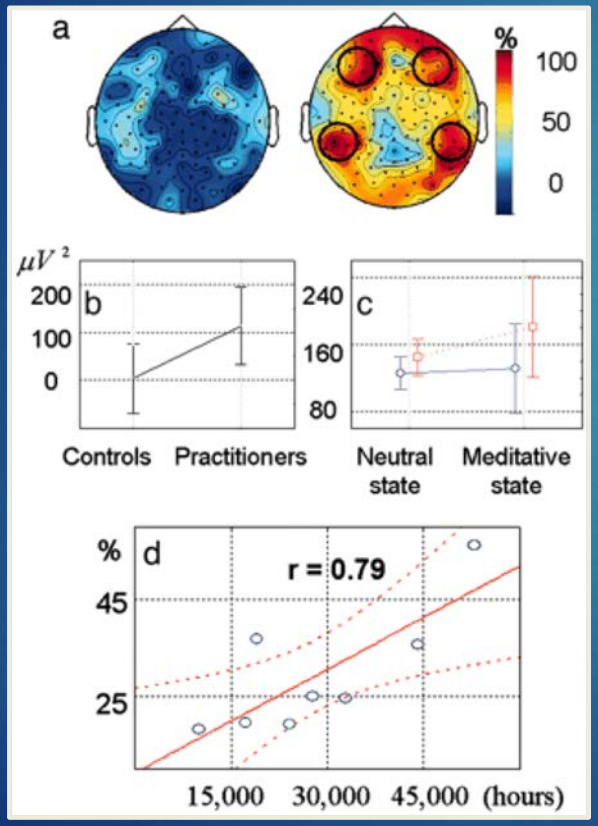
Tang Y

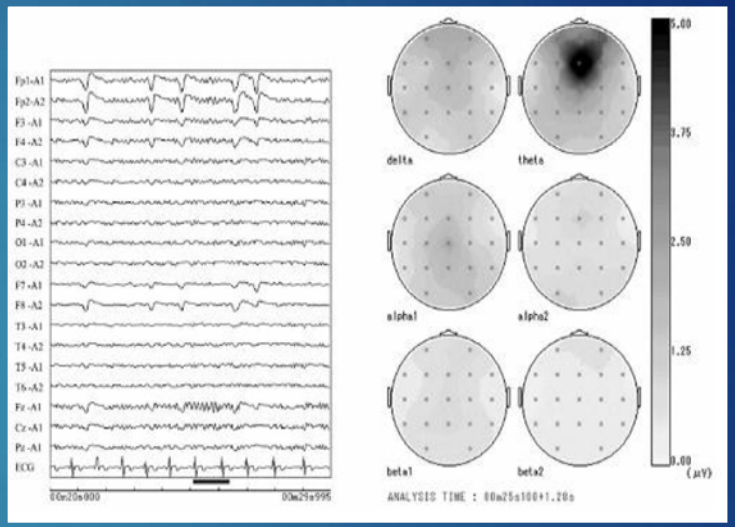
Volkow N (2015)

1. Attention regulation
2. Body awareness
3. Emotion regulation, including
   a. Reappraisal
   b. Exposure, extinction, and reconsolidation
4. Change in perspective on the self

Hölzel, BK. et al (2011). *Perspectives on psychological science*, 6(6), 537-559.
Tang, Y.Y …Volkow, ND et al (2015. *Trends in cognitive sciences*, *19*(8), 439-444.

Gamma Activity & Synchrony During Mental Mindfulness Training

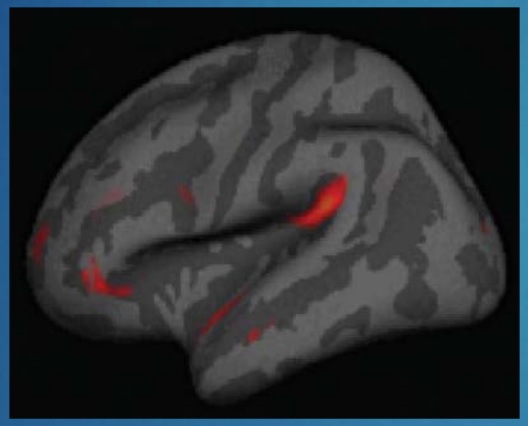


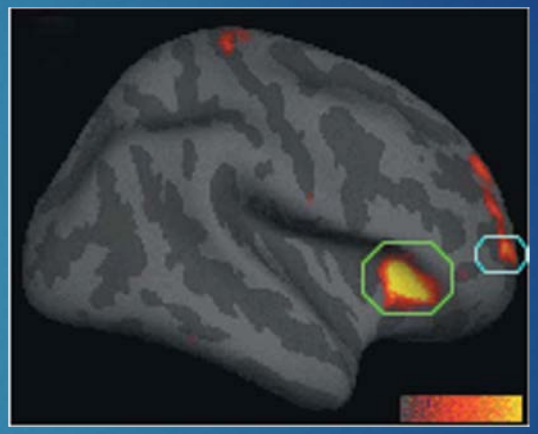


Theta Frontalization
Su-Soku Trainees

Lutz, A…Davidson, R. J. (2004). *PNAS*, *101*(46), 16369-16373.
Kubota, Y. et al (2001). *Cognitive Brain Research*, *11*(2), 281-287.

Meditation Effects on Cerebral Anatomy





Lazar, S. W., Kerr, C. E., Wasserman, R. H., Gray, J. R., Greve, D. N., Treadway, M. T., et al. (2005). Meditation experience is associated with increased cortical thickness. *Neuroreport, 16*(17), 1893-1897.

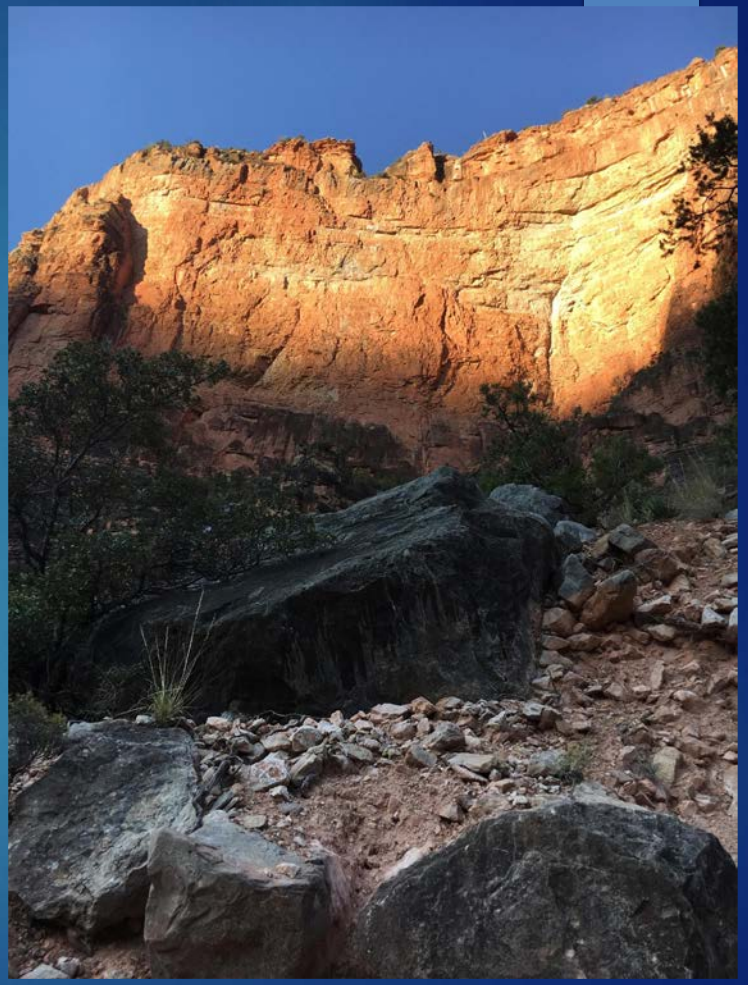
Physical Set-Ups for Craving & Relapse

1. **Brain dysfunction from substance use**
2. **Poor diet**
3. **Excessive use of caffeine and nicotine**
4. **Lack of physical activity**
5. **Poor stress management**
6. **Poor sleep**
7. **Lack of support system**
8. **Lack of meaningful activity**

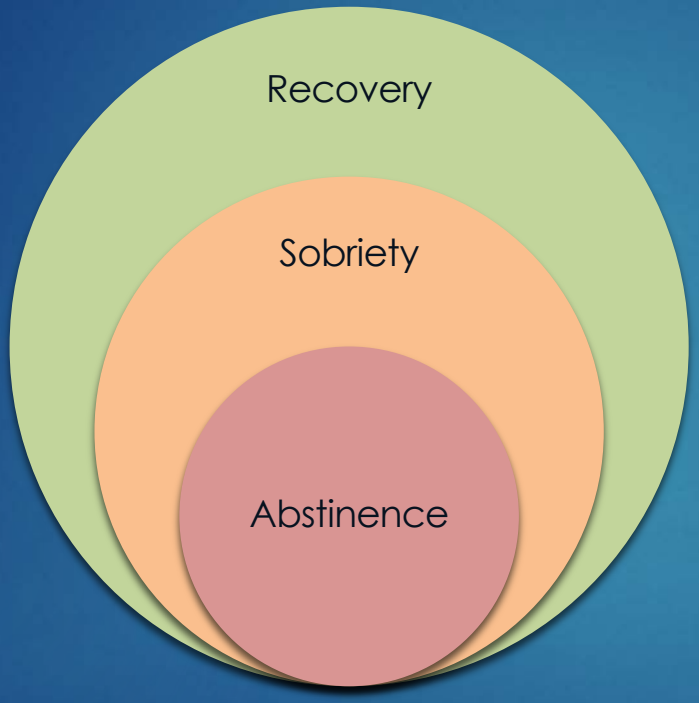
Gorski T (2001). Cocaine, craving and relapse. Available online at http://www.tgorski.com/gorski_articles/cocaine%20craving%20&%20relapse%20010523.htm

Yesterday I was clever,
so I wanted to change the world.
Today I am wise,
so I am changing myself.

Rumi



The Way Out of Addiction



"A process of change through which Individuals improve their health and wellness, live a self-directed life, and strive to reach their Full potential"

Relapse Prevention

Stopping use

SAMHSA (2011): Working definition of recovery. https://store.samhsa.gov/shin/content/PEP12-RECDEF/PEP12-RECDEF.pdf

Elements of Recovery

1. External supervision
2. New group belonging
3. Competing behavior and structure
4. Self-care
    a. Skills- and motivation-building
    b. Giving behaviors (spirituality)
    c. Mental-physical health and wellness (lifestyle)
5. Deepened spirituality

Kaskutas et al (2014). *J studies alcohol and drugs* 75(6): 999-1010.
Stall et al (1986). *Int J Addictions*. 21:1-23.
Valliant (2003). *Addiction.* 98(8): 1043-1051.
Dawson et al (2001). *Addiction*. 100:281-292.
Witkiewitz et al. *J Abnormal Psychology* 116(2): 378.
Witkiewitz, et al (2010). *Addiction*, *105*(8), 1403-1413.

Mind-Body Medicine & CAM

MBM evidence-based medicine: holistic, integrative, self-care.

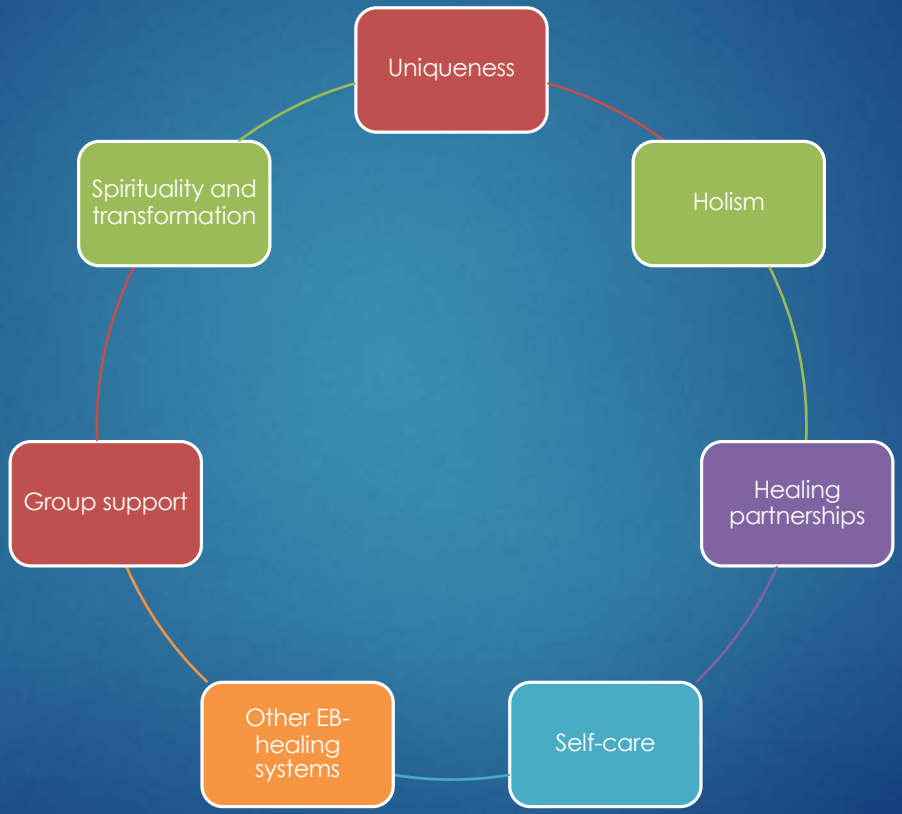
- Can be performed by individuals on their own after they have been trained in the practice of the therapy.

One in three U.S. adults (33.2%) used complementary health approaches.

MB approaches: widespread yoga (9.5%), chiropractic or osteopathic manipulation (8.4%), and meditation (8.0%)

National Center for Complementary Integrative Health
https://nccih.nih.gov/research/statistics/NHIS/2012

Mind-Body Medicine: 7 Pillars



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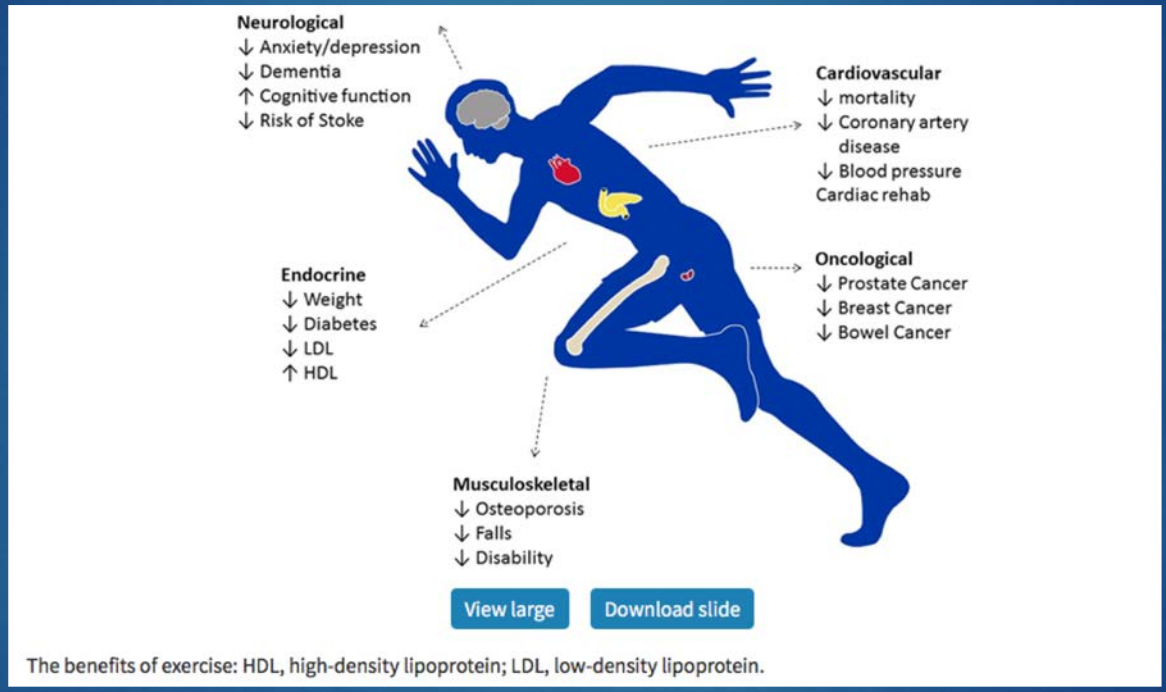
MIND-BODY SKILLS GROUPS TECHNIQUES

7 Ways Why Food Is a Tool in Your Recovery

1. Shared brain centers stimulated by food, substances and behaviors.
2. Humans respond to stress with a famine response. Glucocorticoids increase food cravings for fat, carbohydrates, salt and dense foods.
3. Early sobriety is a stressful state.
4. Hormones involved in appetite and energy homeostasis also play a role in substance craving, reward and compulsive use: leptine, orexin, galanin, ghrelin, insulin and cortisol.
5. Food to aid detoxification mechanisms.
6. Malnourished brain and depression.
7. Mindful eating.

Groesz, LM et al (2011). *Appetite, 58,* 717-721.
Schneider, ER et al (2007). *Alcoholism: Clinical and Experimental Research*, *31*(11), 1858-1865.
Sinha, R. et al (2013). *Biological psychiatry*, *73*(9), 827-835.
Tomiyama, AJ et al (2011). *Psychoneuroendocrinology, 36,* 1513-1519.

Salutary Effects of Physical Activity



The benefits of exercise: HDL, high-density lipoprotein; LDL, low-density lipoprotein.

Sharma, S. et al (2015). Exercise and the heart: the good, the bad, and the ugly. *European heart journal*, *36*(23), 1445-1453.

Tending & Befriending, Oxytocin, Stress, Attachment & Addiction

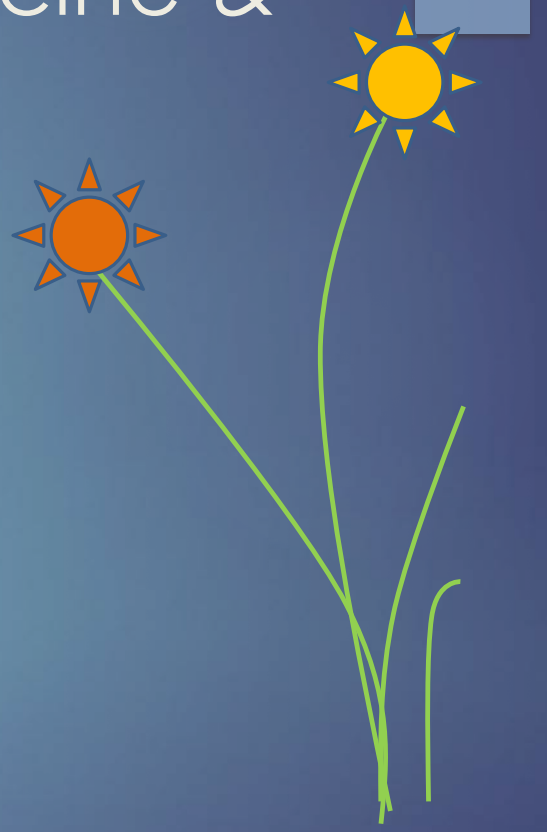
Taylor SE (2006) *Curr Dir Psychol Sci.* 15(6): 273-277.

Bowen, MT et al (2017). Rebalancing the addicted brain: oxytocin interference with the neural substrates of addiction. *Trends in neurosciences*.

Tops, M., Koole, S. L., IJzerman, H., & Buisman-Pijlman, F. T. (2014). Why social attachment and oxytocin protect against addiction and stress. *Pharmacol Biochem Behav*, *119*, 39-48.

Synchrony: Mind-Body Medicine & Addiction Recovery

1. Holistic and integrative
2. Individualized
3. Self-care & self-efficacy
4. EB skills for stress & co-occurring conditions
5. Promote frontalization and self-regulation
6. Lifestyle change: diet, physical activity
7. Group support
8. Enhancing recovery capital
9. Spirituality



Recovery Practice

Lea

Large weekly events, a basic practice and daily mini's

6:00 am – daily intentions and meditation w/ LK 30 min

7:30-8:00 mindful walking/driving to work

8:00-12:00 hourly stretches and breathing

12:00-12:30 gratitude during lunch

1:00-4:00 PM hourly stretches and breath

4:00-4:20 PM Qi Gong for transition home

5:00-7:00 PM informal practice as needed

7:30-7:40 PM call sponsor

Bedtime: Prayer gratitude

ANCHORS

- As needed skills
- Webinars and lectures
- External refuges to remind her of intentions
- Weekly recovery meetings
- Medical appointments
- Sobriety apps
- Drawing with coloring books

There are very few fields in medicine where people can use the illness to transform their lives. Life-threatening situations can do that. People with cancer can do that. In PTSD it is called post-traumatic growth. Post-addiction growth is called "recovery" where the addiction changes from burden and an illness, to a vehicle of transformation. It is both humbling and an honor to be in the presence of such transformation. The crow in the fable once said: "Every flight begins with a fall."

Mind-body medicine skills groups are both a refuge and a laboratory where people safely venture inward, trying out new skills as they uncover their true nature. It is a courageous act of self-love. It is to embrace what Pat Deegan, recovery advocate and activist, says is the essence of recovery: "the human vocation of becoming more deeply, more fully human."

Jose Calderon-Abbo, M.D.

Mind-Body Relapse Prevention from Addictions

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