



COPE Webinar Series for Health Professionals

June 17, 2021

The New Integrative Health Paradigm



Moderator
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Today's Webinar Objectives

1. Describe key elements of Integrative Nutrition and Health
2. Explain scientific mechanisms of mind-body interaction



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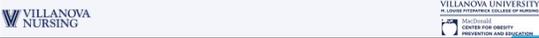
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The New Integrative Health Paradigm



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 Chair, Department of Integrative Medicine and Nutritional Sciences, Thomas Jefferson University
 CEO Marcus Institute of Integrative Health, Jefferson Health



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Villanova COPE Webinar: The New Integrative Health Paradigm

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 Thomas Jefferson University and Jefferson Health

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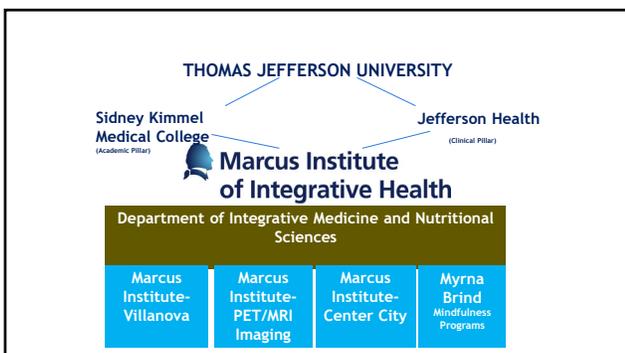
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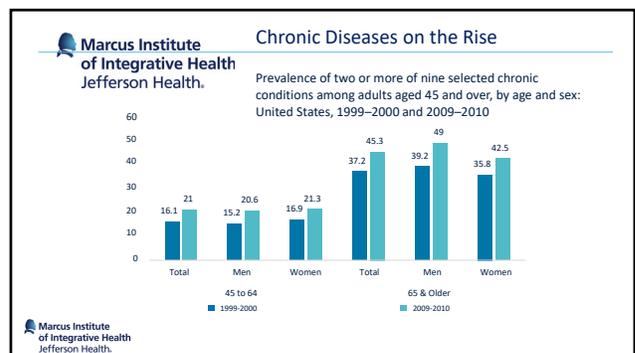
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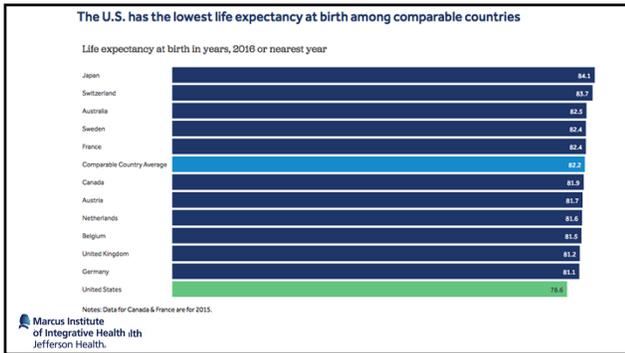
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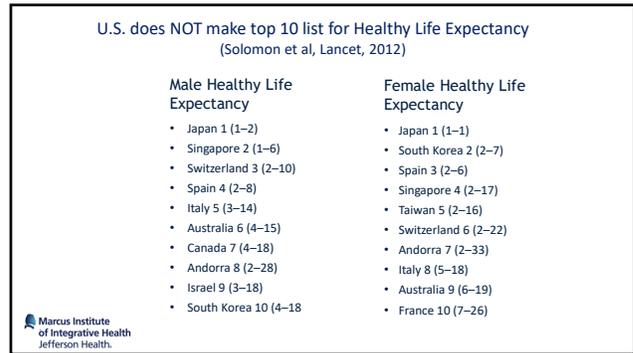
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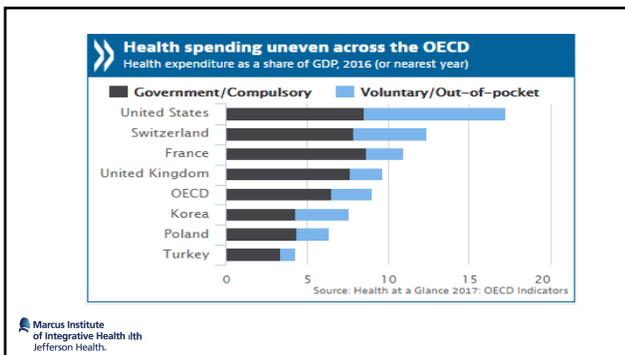
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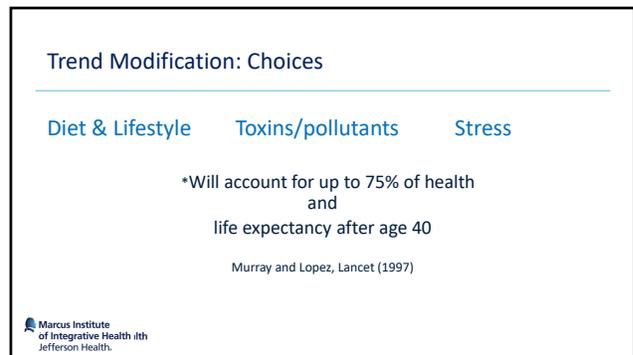
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Descartes and Mind-body Dualism

- Argued that the great differences between body (an extended thing) and mind (an unextended, immaterial thing synonymous with the soul) make the two ontologically distinct
- Further, for him the two are radically different kinds of substances—the mind or soul defined as thinking, and the body defined as matter and unthinking

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17th and 18th Century Mechanism

- **Descartes** - attempted to understand the behavior of the whole from the properties of its parts
- **Galileo** - restricted science to that which could be measured and quantified
- **Newton** - provided a sophisticated, mathematical understanding of non-living systems

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Networks- the pattern of life

- The components of all living systems are arranged in network fashion (e.g., food webs, the nervous system)
- Networks are non-linear and may generate feedback loops
- Networks have the capacity to be self-regulating and self-organizing
- Hence, in a (non-living) machine the parts exist for each other (e.g., the chain on a bicycle). In a living system the parts exist by means of each other (e.g. organ regeneration) (Kant)

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Cognition- the process of life

Mind is not a thing but a process

The organizing activity of living system is described as cognitive

Life and cognition are inseparably connected

Even the simplest bacterium has mind (cognition)

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Genes & Environment

Genes

Environment

Nutrition
microbiome
Toxins
Stress, etc.

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Gene Expression

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Stress Response Pathways

Stimuli

Hypothalamus

- Anterior Pituitary
- Adrenal Cortex
- Cortisol
- Blood sugar problems

- Adrenal Medulla
- Epinephrine
- NorEpinephrine
- HTN, High Chol

- Sympathetic Post-Ganglionic Neurons
- NorEpinephrine
- NorEpinephrine
- Arrhythmia, Cancer, Alzheimers, Depression

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Biology of Stress: Immune Variables

- Cytokines and Chemokines (such as IL-1 α and - β , IL-2, TNF- α , IL-8, IL-10, and others)
- Nuclear Factors, such as NF- κ B
- Functional activities of leukocytes, such as NK cell activity and receptor changes

Stressful task → ↑ Cortisol, IL-6, IL-1 β , TNF- α , CRP, MPO and G-CSF, ↑ Th1 and Th2 mediators.

Optimism → ↓ Cortisol and inflammation;
Pessimism → ↑ Inflammation.

Traumatic stress → ↑ CD4⁺ and CD8⁺ T cells, ↑ CRP (lasting even 20 year after the trauma).

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“It’s not the load that breaks you down, it’s the way you carry it.”



Lena Horne

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Mind-Body Practices Change Biology

Yoga



- ↓ Cortisol levels,
- ↑ β-endorphins,
- ↓ IL-6 and TNF-α in chronic inflammatory diseases;
- ↓ Risk of cardiovascular events in obese subjects.

Meditation



- ↑ IL-10,
- ↑ Epinephrine levels,
- ↓ IL-6, IL-8, TNF-α
- ↓ Flu-like symptoms in subjects who underwent experimental endotoxemia (E. Coli).

Music therapy



Active (singing)

- ↓ Corticosterone levels,
- ↓ IL-4 in experimental asthma;
- ↓ IL-2 and IFN-γ;
- ↑ IL-4 and IL-10

Passive (listening)

- ↑ Allograft survival,
- ↑ Production of CD4⁺CD25⁺Foxp3⁺ regulatory cells in allogeneic cardiac allografts.

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Mindfulness Meditation- a well researched mind-body therapy

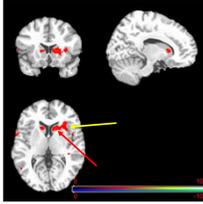
“(A) refined and systematic way to pay attention, on purpose, in the present moment and non-judgmentally.” *Jon Kabat-Zinn*

- Mindfulness lowers stress levels in illness and wellness populations
- Mindfulness is associated with decreased inflammation, increased immune function, and functional brain changes (Monti et al 2012)

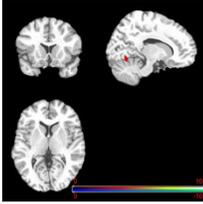
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Differences between Post-training and Pre-training resting scans. Monti et al, Stress & Health (2013)



Mindfulness group (p<0.001)

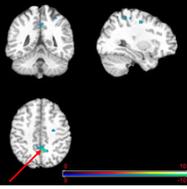


Control group (p<0.005)

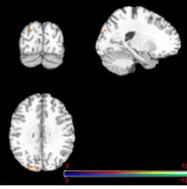
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Stressor task post minus stressor pre-training program Monti et al, Stress & Health (2013)



Mindfulness group (p<0.005)

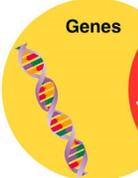


Control group (p<0.005)

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It’s not just a matter of Genes



Genes



Environment
Nutrition
Microbiome
Stress, emotions...
Toxins

YOU

Phenotype

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Nutritional Environment Factors to Consider

- **Body Weight:** Obesity and malnourished states can have negative health consequences
- **Sufficient Nutrients:** Not enough macro/micro nutrients or too much can both be a problem
- Foods rich in **Phytonutrients:** Plant-based foods in their natural state consistently shown to have health benefits
- **Processed foods:** cured meats, junk foods, sugary snacks- all are associated with problems
- **Healthy Fats/Unhealthy Fats:** Fats can be pro-inflammatory or anti-inflammatory depending on their structure and form
- Effects of Diet and nutrition on the Gut Microbiome

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Consumption of ultra-processed foods and cancer risk: results from NutriNet-Santé prospective cohort
Fiolet et al, *BMJ* 2018;360:k322

- Large Prospective Study
- Ultra-processed fats and sauces (P=0.002) and sugary products (P=0.03) and drinks (P=0.005) were associated with an increased risk of overall cancer, and ultra-processed sugary products were associated with risk of breast cancer (P=0.006)
- Consistent with these findings, secondary analyses showed the consumption of “minimally/unprocessed foods” was associated with lower risks of overall and breast cancers (P<0.001)

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Sugary drinks are positively associated with the risk of overall cancer and breast cancer
Chazelas et al, *BMJ* 2019;365:l2408

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100% Fruit Juices also positively associated with the risk of overall cancer. Artificially sweetened beverages were not.

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Body weight and Diet directly and Independently affect genes and health outcomes

Food itself is a highly important factor in gene expression
Body fat is strongly linked to prevalence of several illnesses
Food and body fat independently affect **inflammation**

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Metabolic Pathways of Essential Fatty Acids

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*Factors thought to impair delta-6-desaturase activity include Mg, Zn, and B1 deficiency; aging, alcohol, trans fatty acids; and high cholesterol levels.

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Higher RBC EPA + DHA corresponds with larger total brain and hippocampal volumes
Pottala et al., *Neurology*, 2014

Objective: To test whether red blood cell (RBC) levels of marine omega-3 fatty acids measured in the Women's Health Initiative Memory Study were related to MRI brain volumes measured 8 years later

Conclusion: A higher omega-3 index was correlated with larger total normal brain volume and hippocampal volume (study group was postmenopausal women). Correlation higher with DHA

* lower omega-3 index may signal increased risk of hippocampal atrophy

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Food: Does it affect behavior?

"That settles it, Carl... From now on, you're getting only decaffeinated coffee!"

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- "Stress, Food, and Inflammation: Psychoneuroimmunology and Nutrition at the Cutting Edge" Kiecolt-Glaser (2010)
- "A Prospective Study of Diet Quality and Mental Health in Adolescents" Jacka et al (2011)
- "A diet rich in olive oil and fruit, characteristics of MD, may protect against the development of depressive symptoms in older age" Giuditta et al (2018)

Diet affects the way we feel physically and emotionally, and stress affects Nutritional Status

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Problematic Foods are hard to give up

Dopamine signaling in food addiction: role of dopamine D2 receptors BMP 2013

Substance use following bariatric weight loss surgery JAMA Surg 2013, "Our study is among the first to document significant increases in substance use following WLS using longitudinal data"

OREOS may be as ADDICTIVE as COCAINE!

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Differential effects of fructose versus glucose

Luo et al., PNAS 2015

Time (Min)	Fructose (uU/ml)	Glucose (uU/ml)
0	~10	~10
30	~20	~65
60	~25	~65

75gm drink of glucose vs fructose

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Eat More:

- Cruciferous vegetables
- Leafy Greens
- Garlic
- Turmeric and ginger
- Fresh herbs (rosemary)
- Green tea
- Omega 3 fatty acids
- Vitamin D
- Organic berries

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Marcus Institute of Integrative Health Jefferson Health. Keep Stress in Check

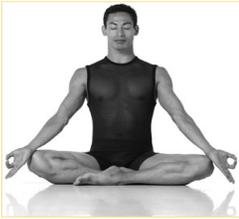
- Breathe as deeply as possible
- Take frequent breaks to stretch
- Sleep enough
- Meditate
- Be Mindful
- Stay hydrated
- Laugh as much as possible

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Marcus Institute of Integrative Health Jefferson Health. **Strive for Balance...But Remember**



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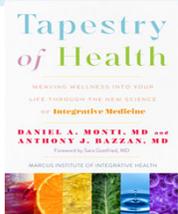
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Even the Best of Us Cheats Sometimes



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Questions?



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Questions?

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