Optimizing Brains

for decision Making, creativity and Health

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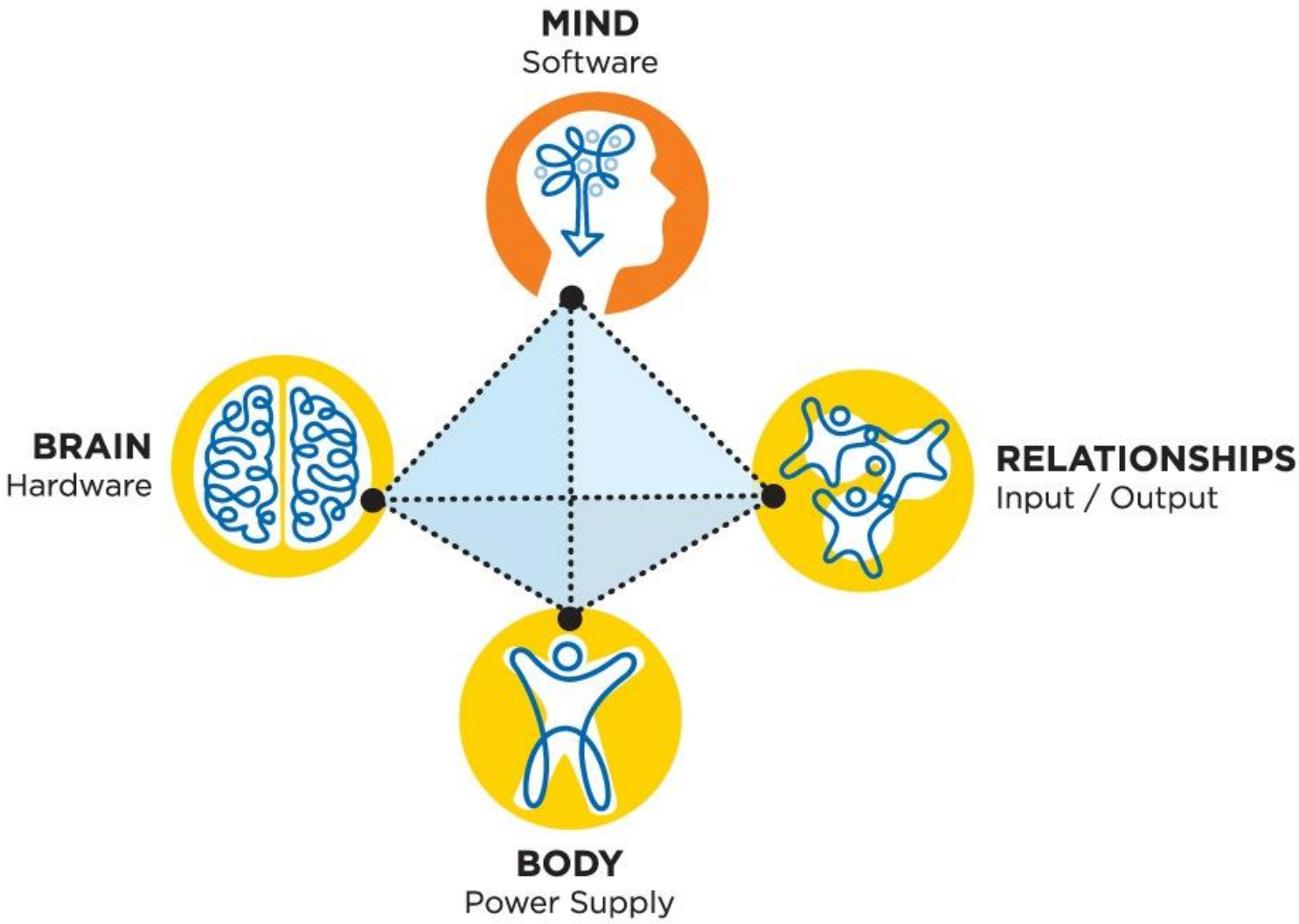
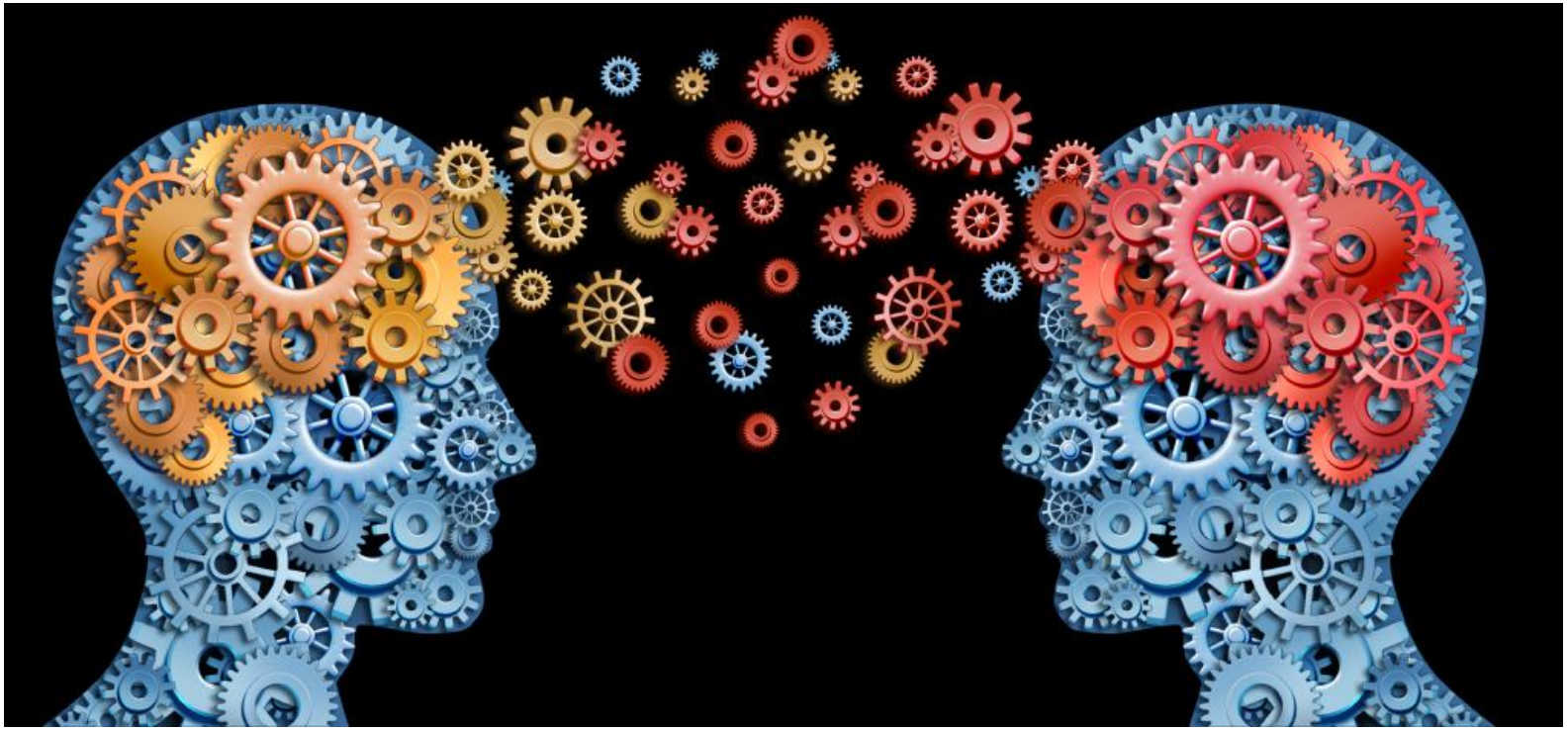
Focus for Today

Improving the conditions for decision-making, creative problem solving and health

- Understand how choices around food, sleep and exercise impact the optimization of our brain
- Understand how trauma and hypoglycemia impact clients decision making.
- To create individualized plans to optimize our brains for decision-making, creativity and heath


MIND
Software
BRAIN
Hardware
RELATIONSHIPS
Input / Output
BODY
Power Supply

What do we know?



Hypoglycemia affects executive functioning

- Decreased attention span
- Decreased emotional regulation
- Decreased ability to cope with stress

- Increased criminality
- Increased aggression
- Increased impulsive behaviors
- Increased addictive behaviors

"Self-control relies on glucose as a limited energy source: willpower is more than a metaphor" (2007)

- Performing acts of self-control **reduced blood glucose levels**
- Low levels of blood glucose after performing the first act of self-control **predicted poor performance on the second task**
- **Consuming a glucose drink improved performance on the third task**

Anxiety/Anger or Hypoglycemia?

Anxiety or Anger

Obsessive thoughts
Worrying about the future
Reliving past events
Hyper-vigilance
Restlessness
Angry outbursts
Irritability
Muscle tension
Fatigue
Difficulty sleeping
Palpitations
Sweating, trembling
Shortness of breath
Feeling light-headed
Chills and hot flashes

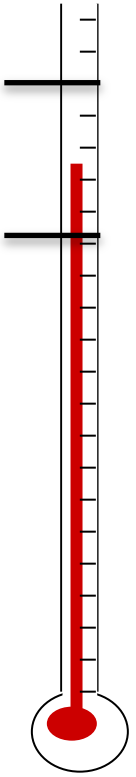
Hypoglycemia

Mild signs:
Nervousness
Trembling
Increased heart rate
Palpitations
Increased sweating
Hunger
Moderate signs:
Irritability
Decreased concentration
Headache
Fatigue
Mental confusion

Anger and anxiety: emotional or hypoglycemic?

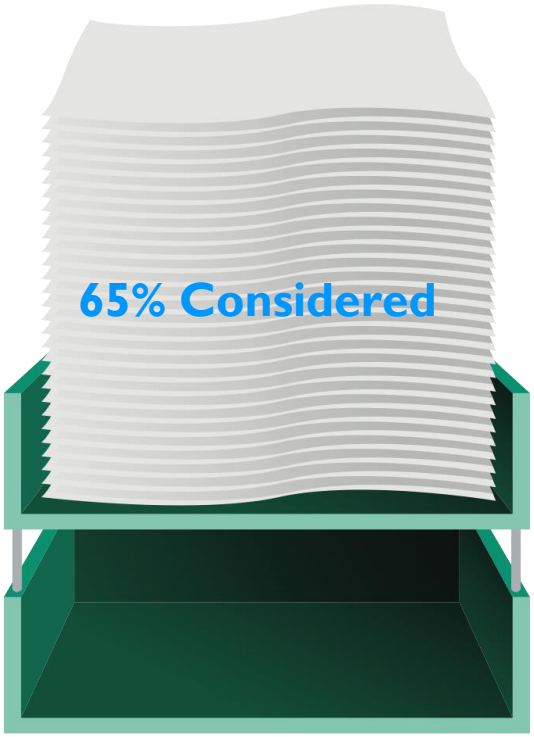
Panic attack/
Extreme anger 10/10

Choice and control become possible 7/10

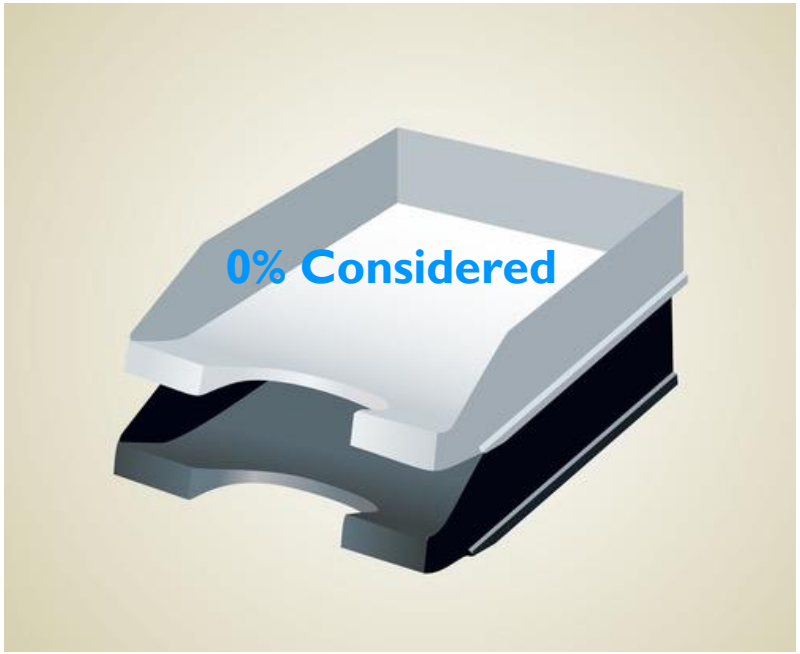


Extraneous factors in judicial decisions

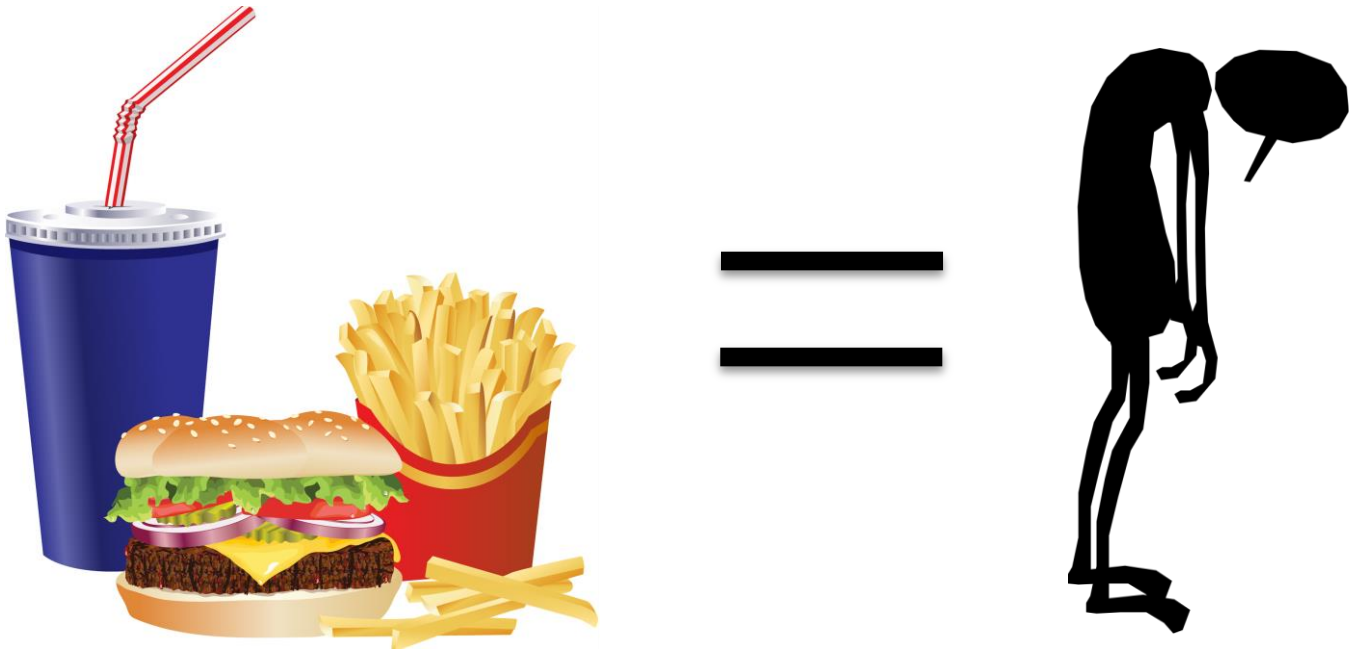
Immediately after a meal



Immediately before a meal

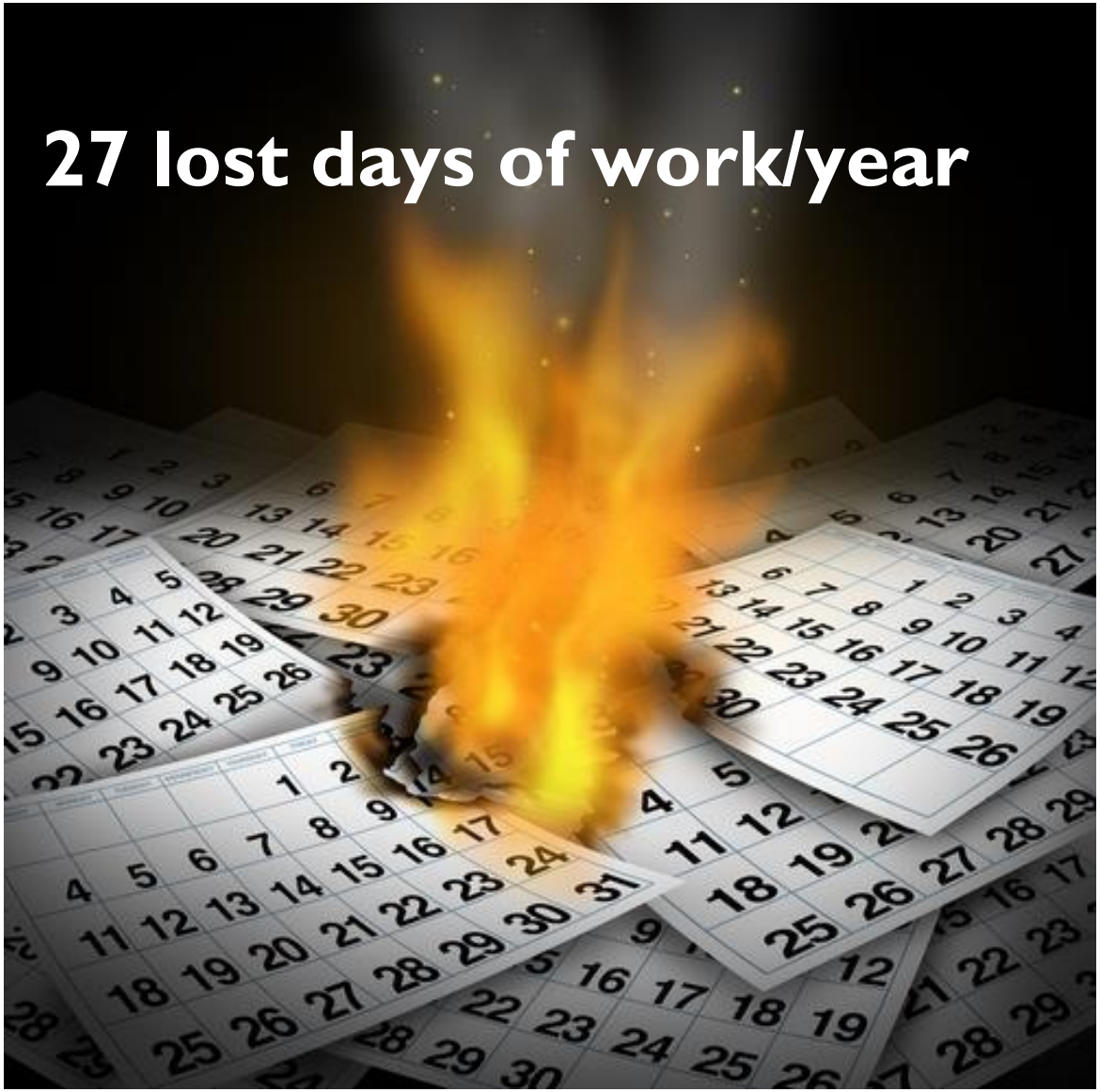


Processed foods and depression



People who consume largely processed foods are
50% more likely to experience clinical depression

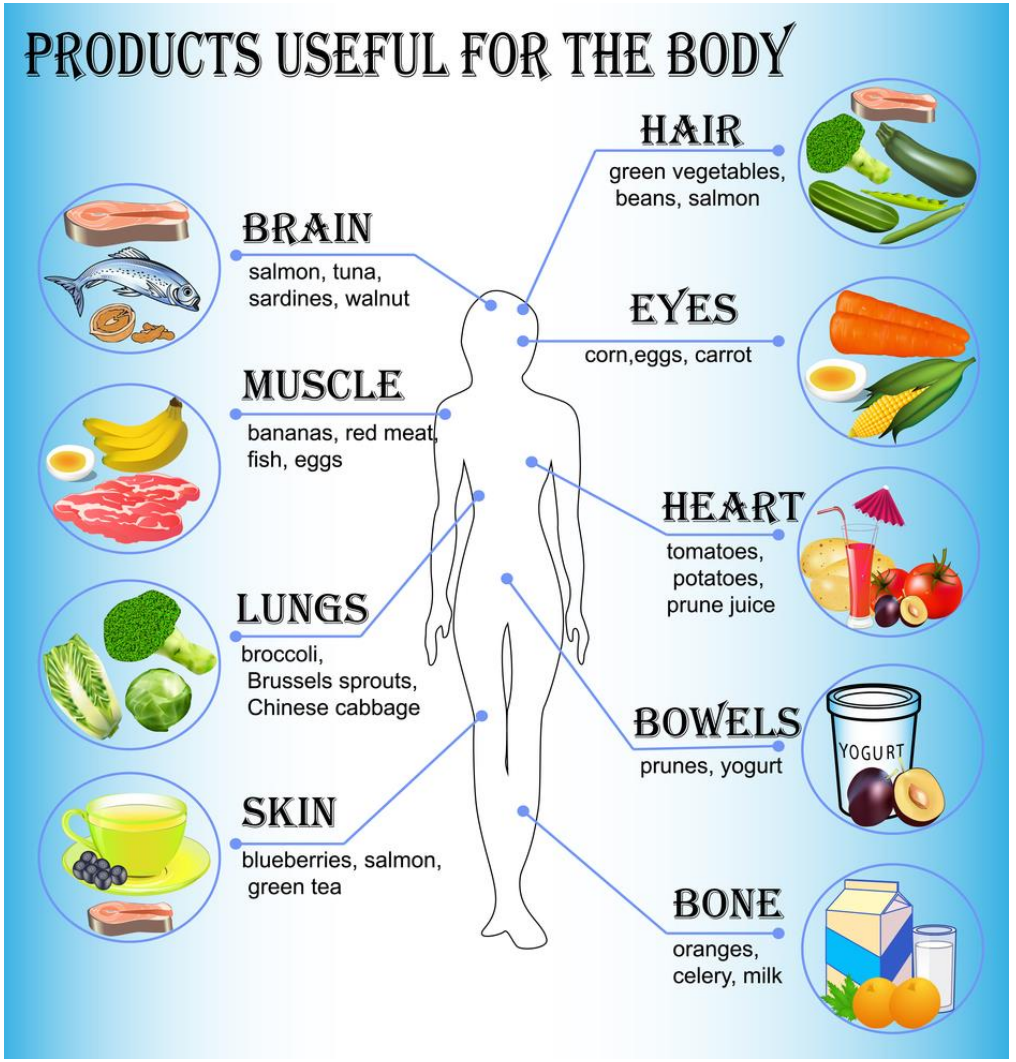
Economic cost of depression



Real food and mood

Lower likelihood of depressive and anxiety disorders

($p<0.05$)



Potential for pre-diabetes

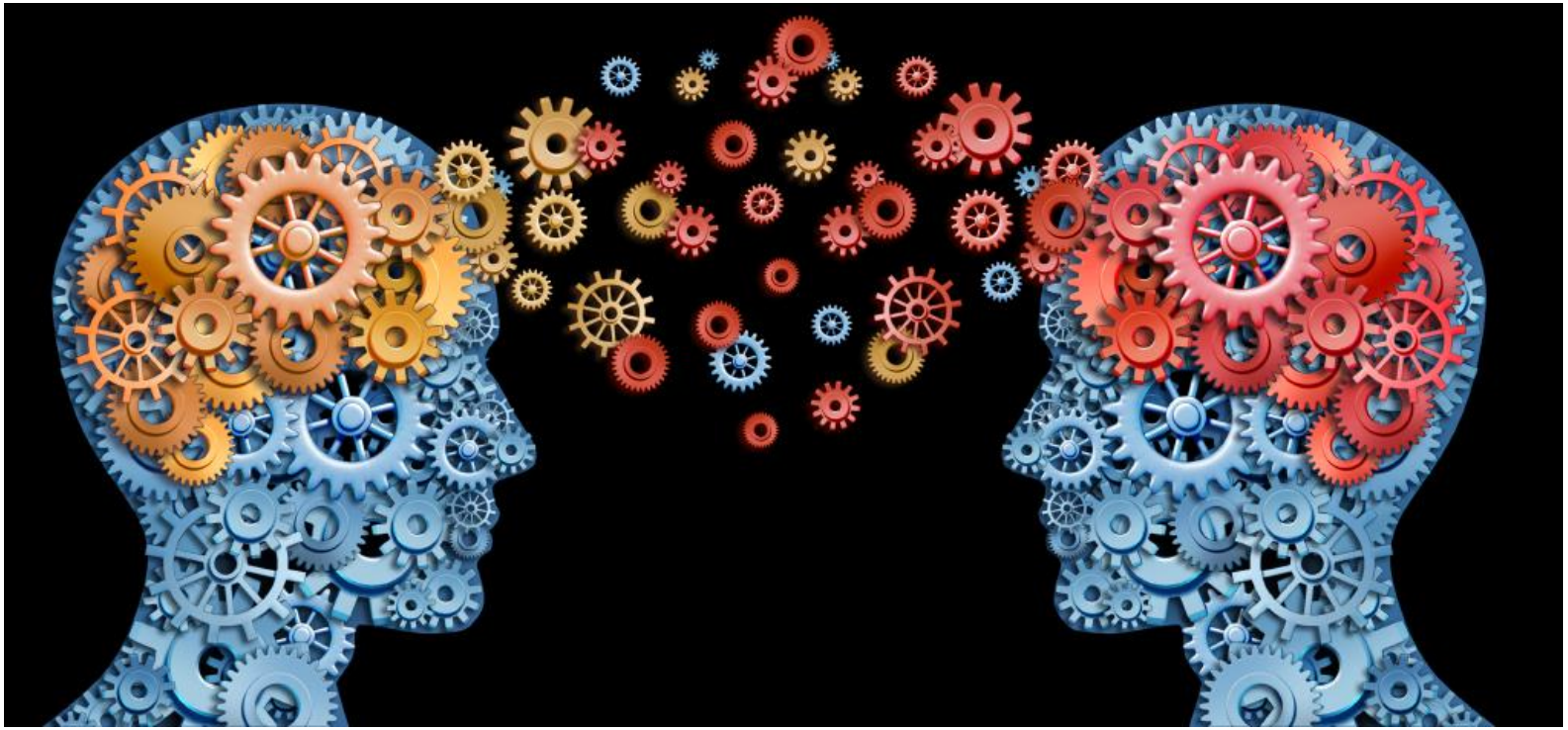
- Family history of diabetes
- Personal history of gestational diabetes
- Lack of exercise
- Diet largely composed of processed food
- Weight gain
- Hypoglycemia
- Mood swings toward anxiety, agitation, irritation
- Plantar fasciitis or loss of sensation in the limbs
- Fasting blood glucose levels greater than 100
- Hemoglobin A1c of 5.7-6.4 (pre-diabetes)
- Hemoglobin A1c greater than 6.4 (diabetes)

Pre-diabetes and cognitive deficits

- Increased depression
- Increased dementia

- Decreased speed of mental processing
- Decreased immediate and delayed recall
- Decreased attention span
- Decreased verbal fluency
- Decreased motor skills

How do we understand it?



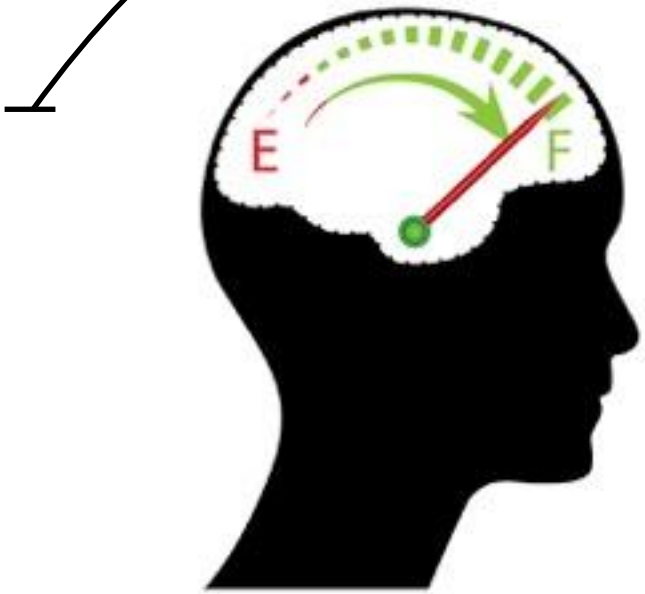
What is your power supply?

5 - Tired
Get the Essentials Done

7- Good Energy
I can handle whatever come and need rest at the end of the day

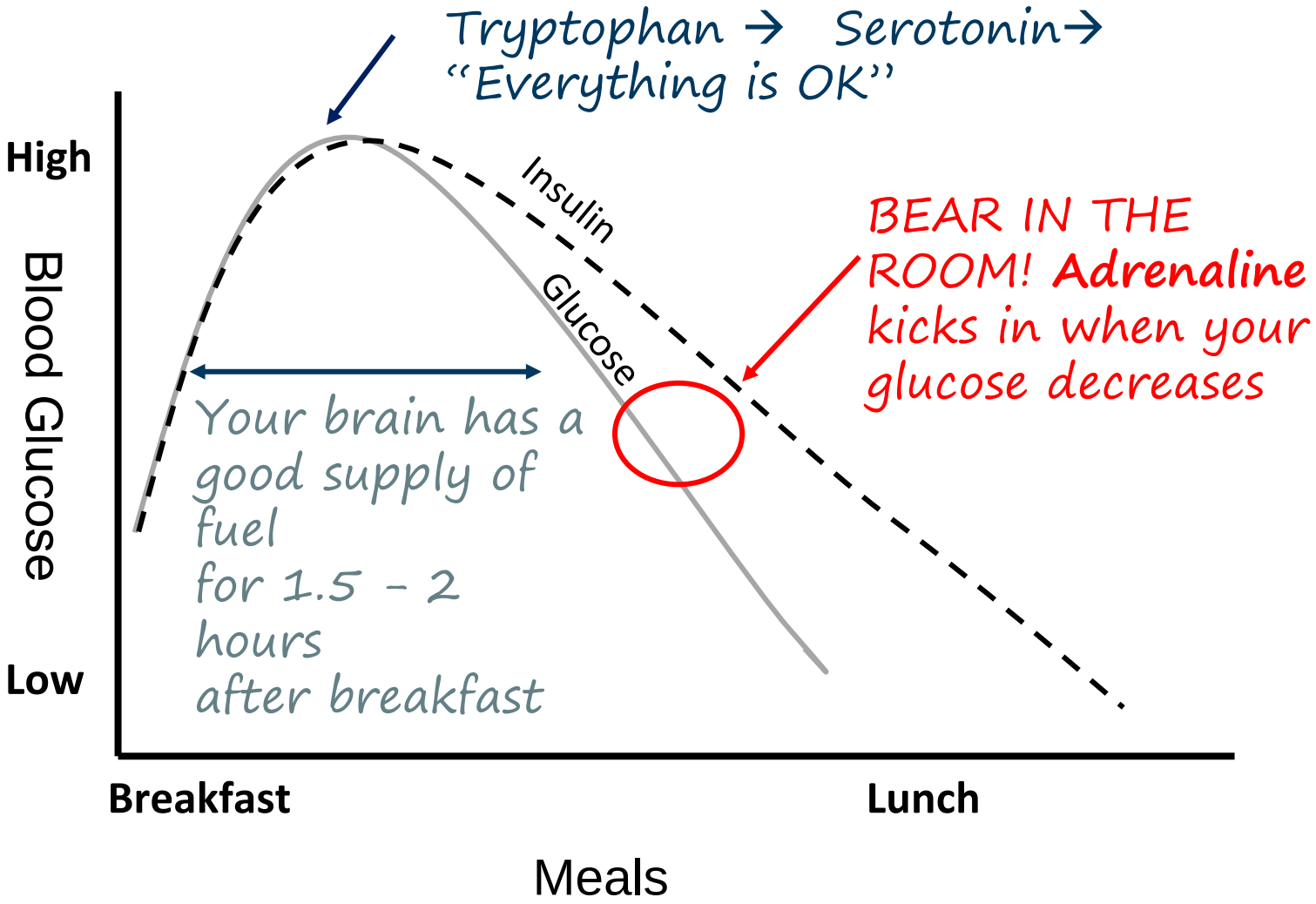
3- Fatigue
Only the Basics

1 - Exhaustion
Not Getting Out of Bed

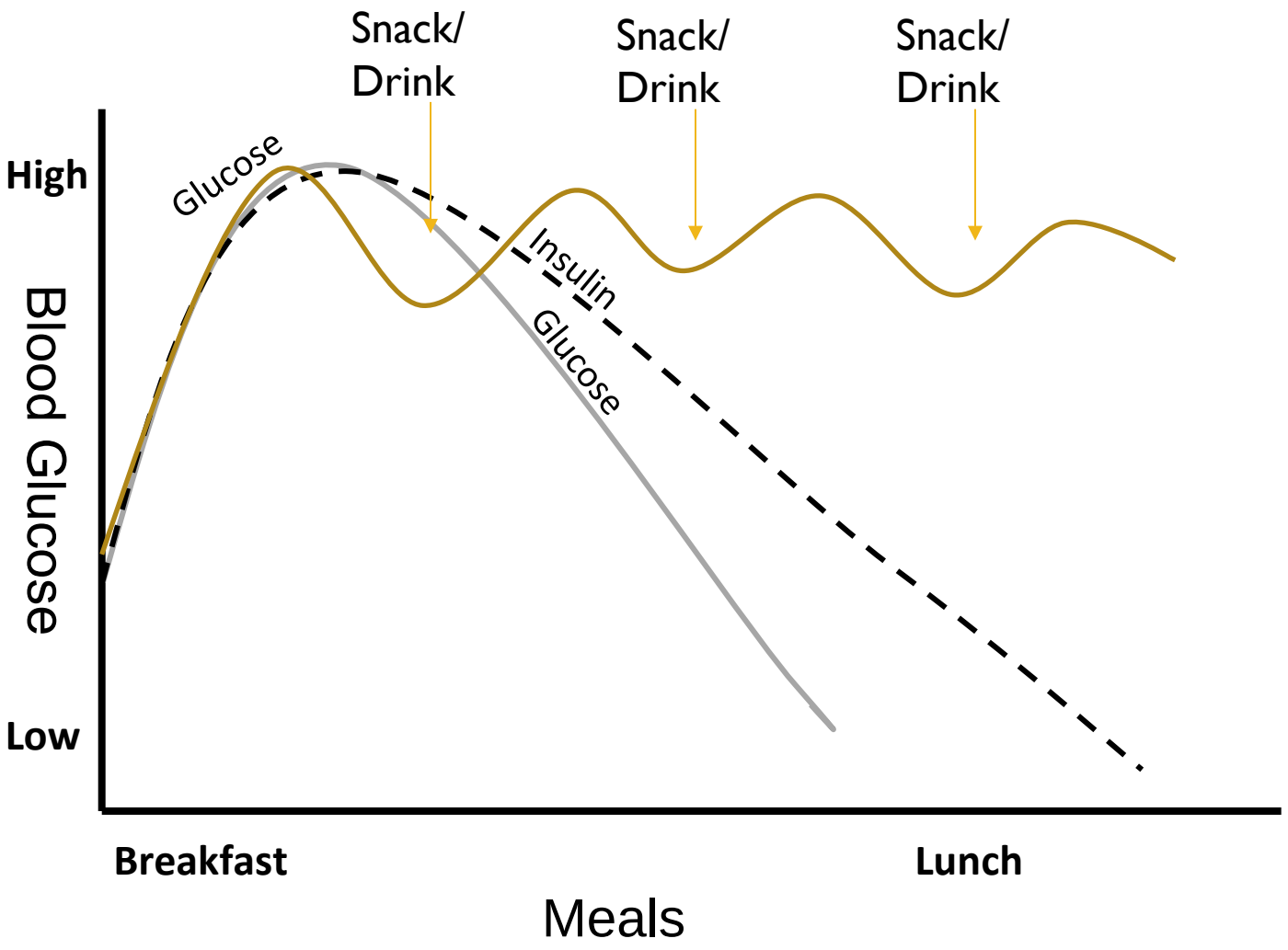


10- Great Energy
I can have a challenging day and energy to enjoy the evening

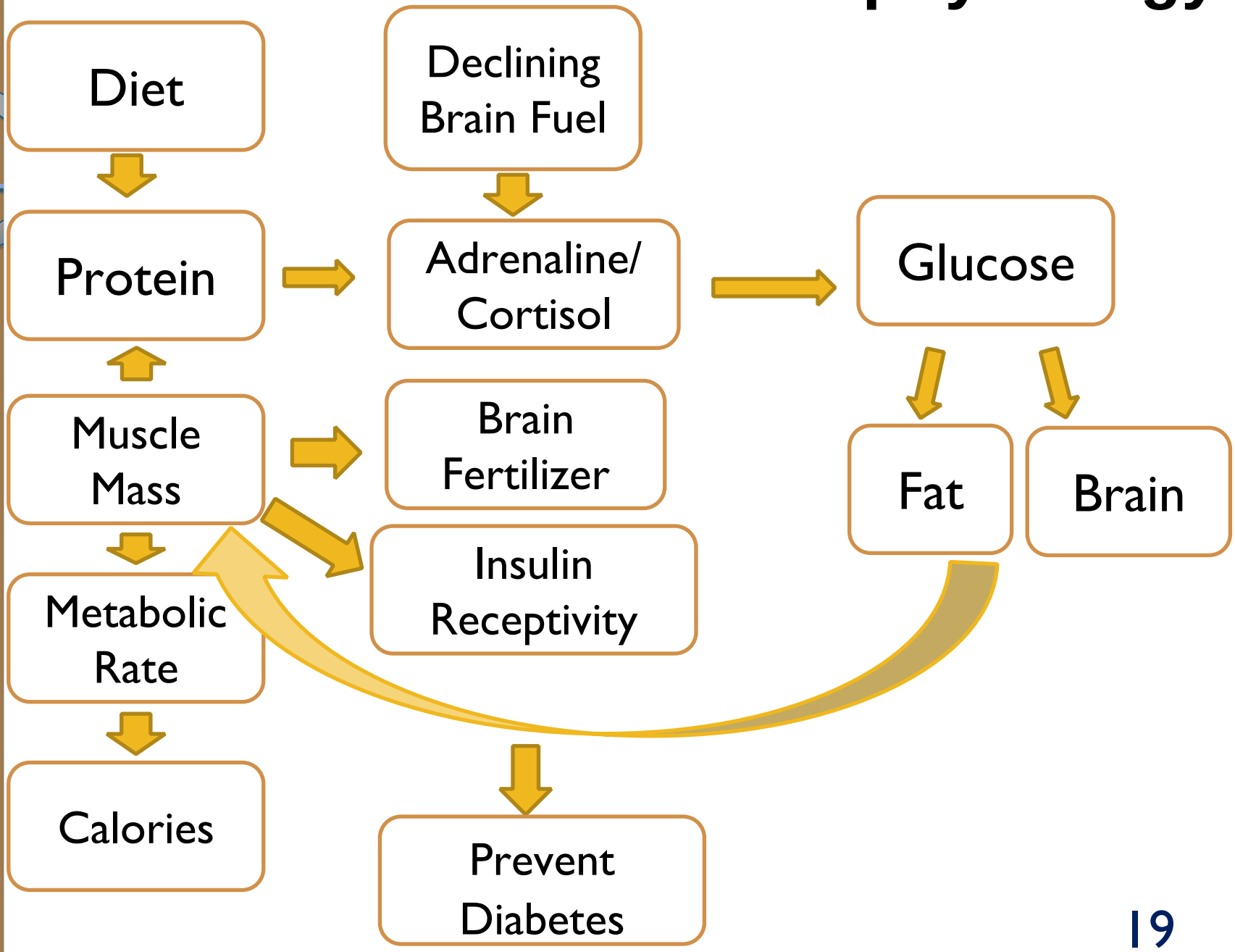
Refined carbohydrate meal or alcohol and glucose



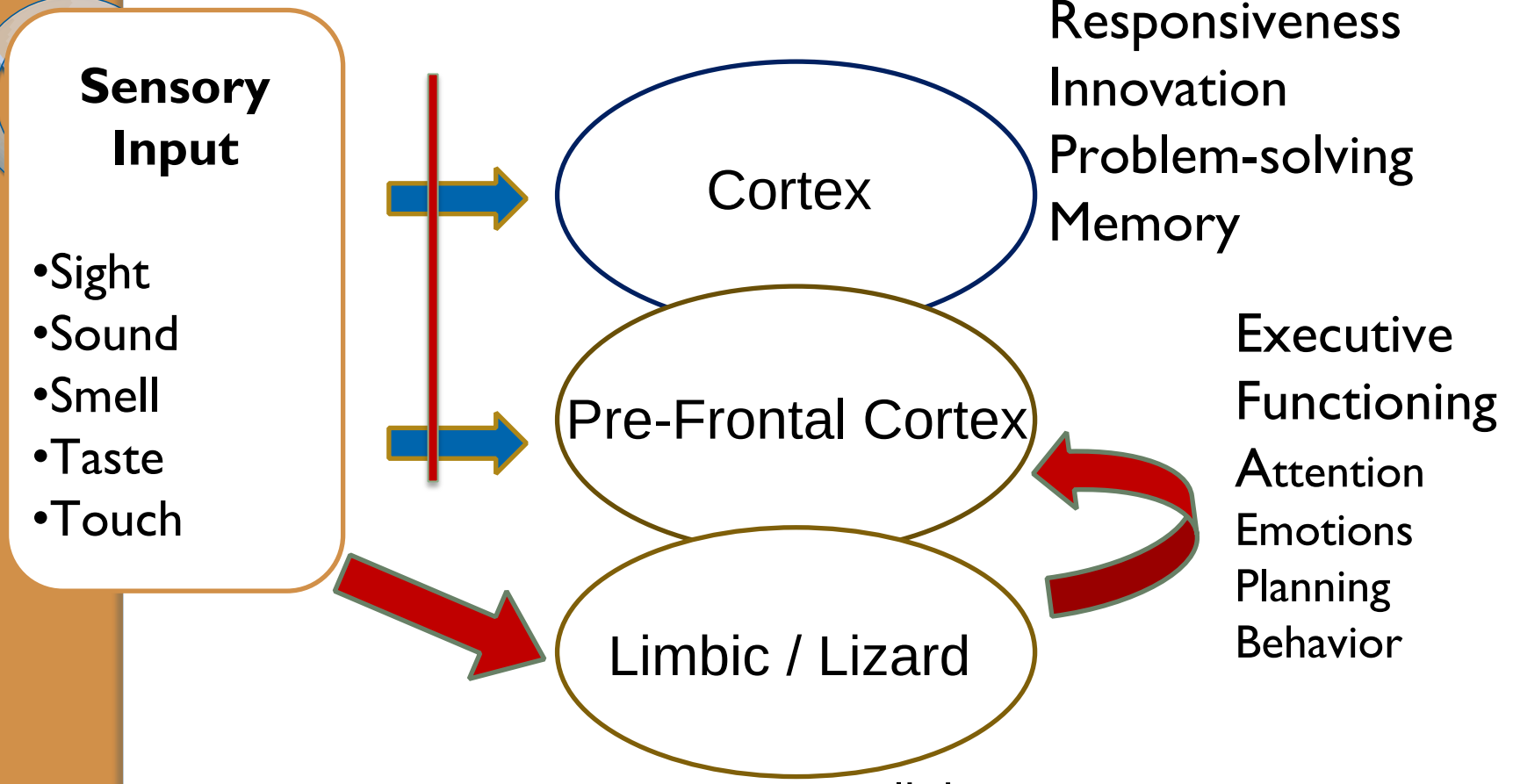
Fueling the brain/hurting the body



The physiology



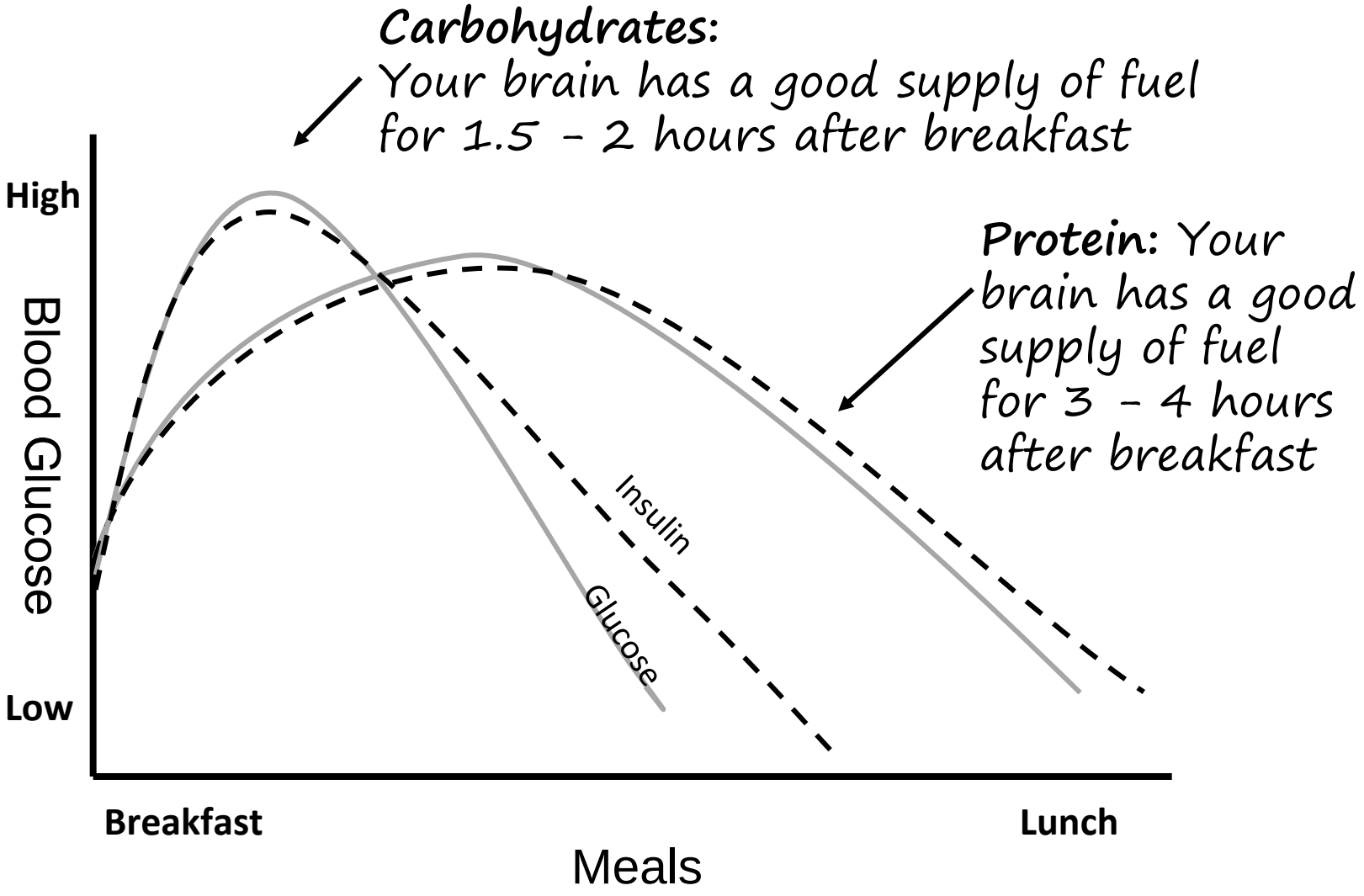
The brain on adrenaline



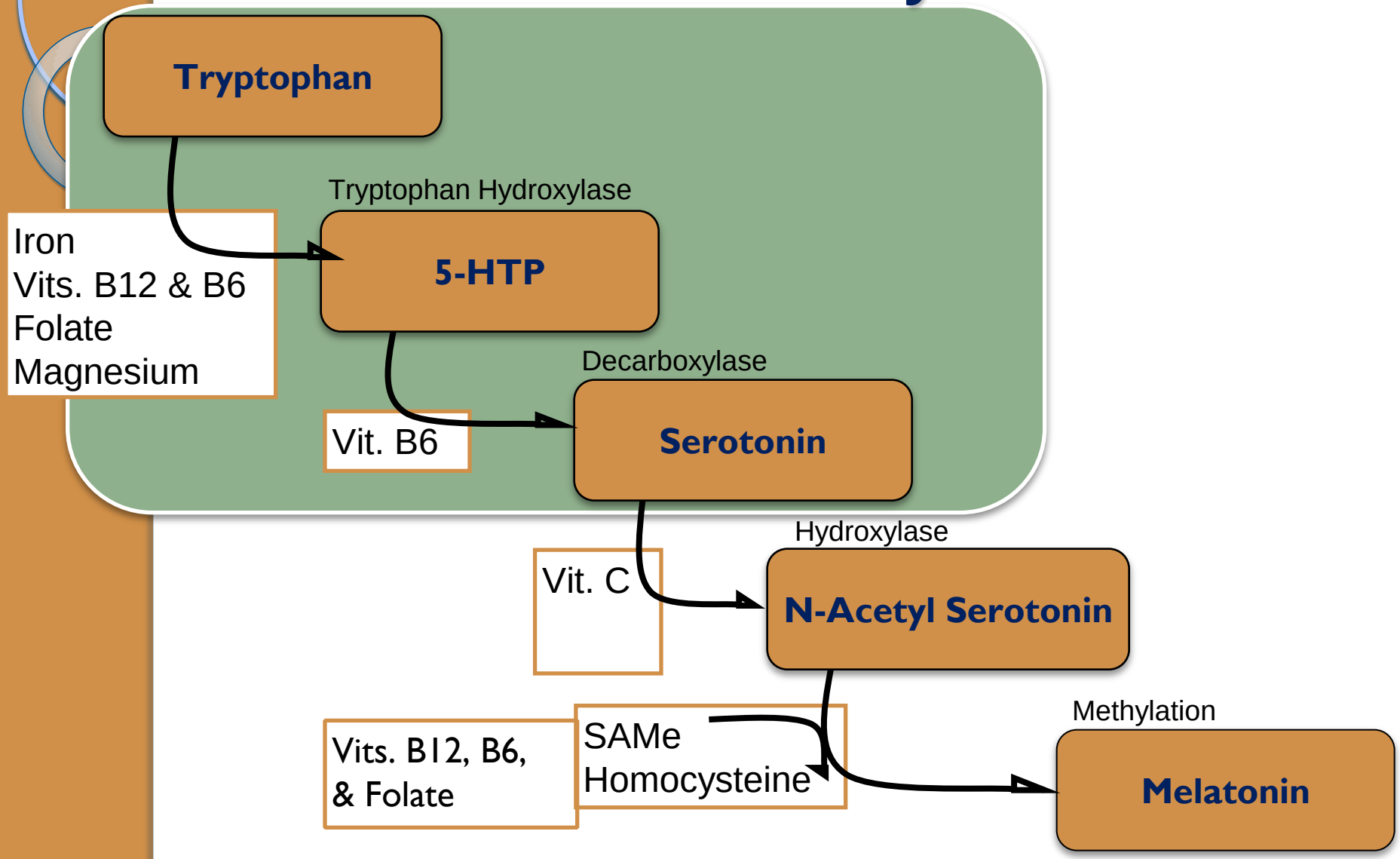
Lizard brain signs & symptoms

- Being anxious, irritable, or agitated
- Anticipating being anxious, irritable or agitated
- Not hungry in the morning
- Waking at 3 am and staying awake for 2 hours - “3 am Committee Meeting”

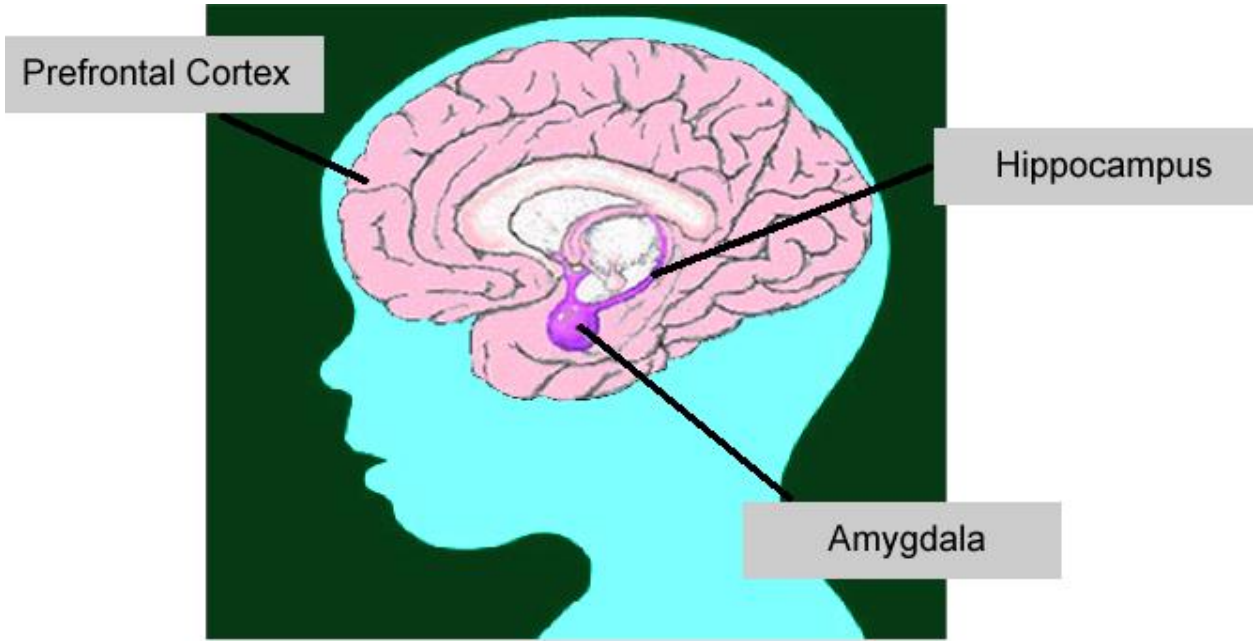
Carbohydrates vs Protein



Neurotransmitter synthesis



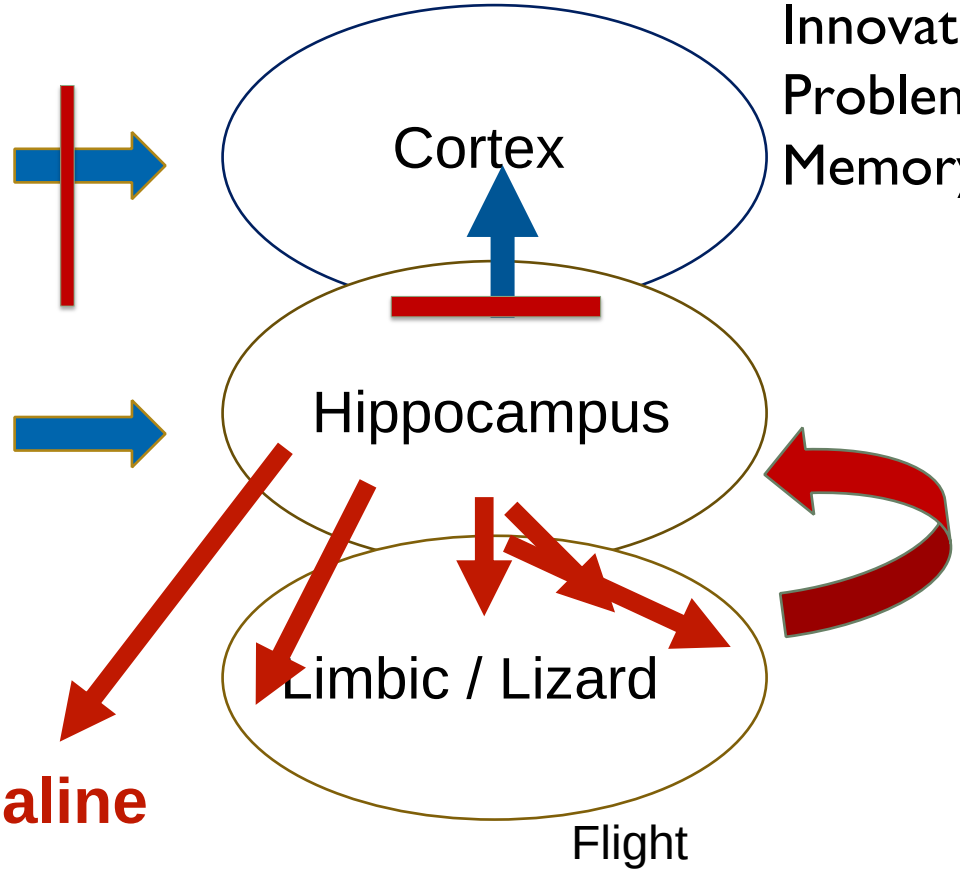
Developing Brains and Trauma



Information Processed in the Brain

Sensory Input

- Sight
- Sound
- Smell
- Taste
- Touch



Responsiveness
Innovation
Problem-solving
Memory

Executive Functioning
Attention
Emotions Planning
Behavior

Adrenaline

Flight
Fight
Disappear
Reactive past-based behavior

The Brain's response to chronic trauma

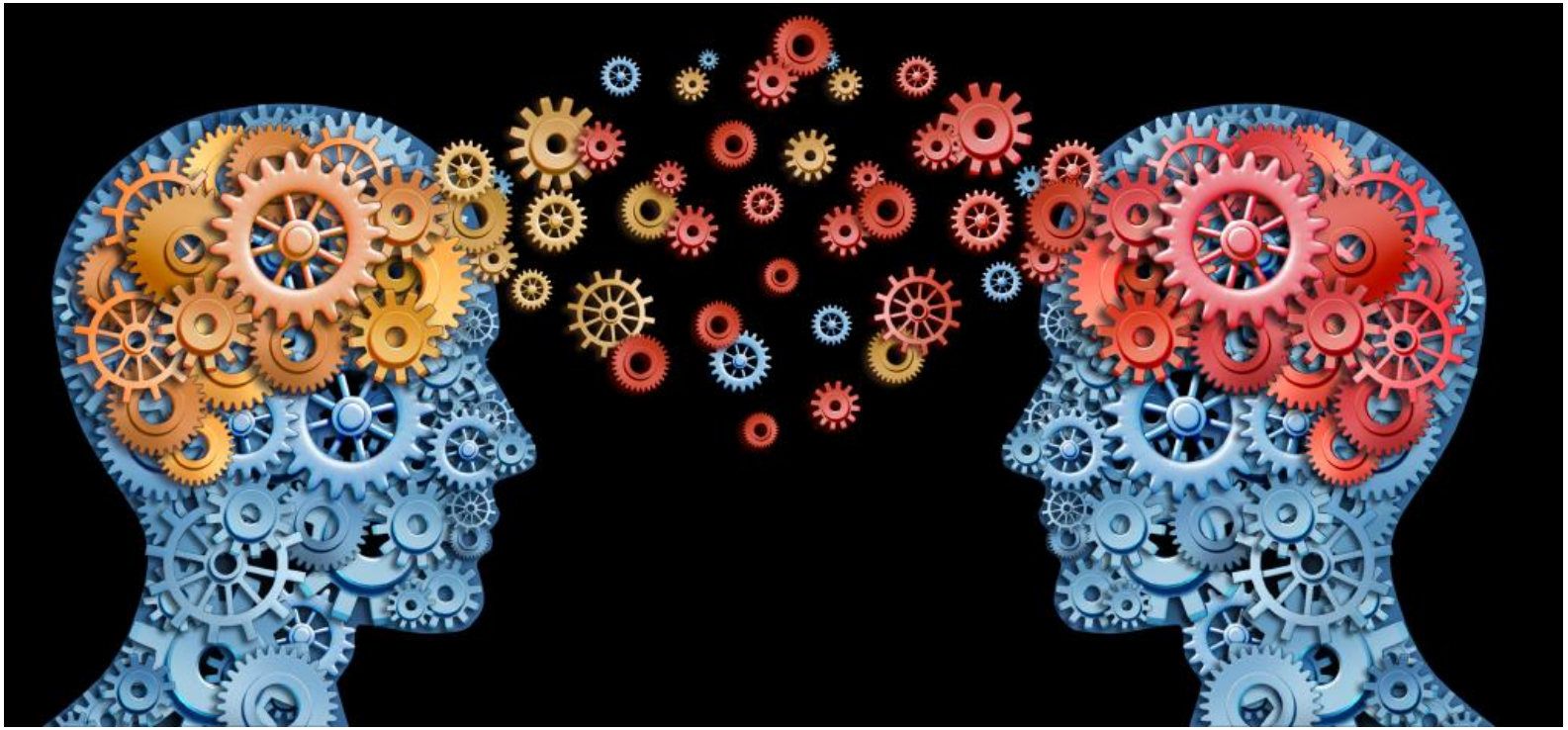
	No Trauma	Trauma
Self	Safe	Vulnerable
World	Reasonably benign	**Threatening**
Future	Reasonably hopeful and manageable	Uncontrollable and unpredictable

Prospective Study with Adolescents

In a study with 3040, 11- 18 years olds, the higher the quality of diet at the beginning of the study predicted higher quality of mental health, and the **lower the quality of diet predicted higher rates of mental health problems.** Additionally, if diet quality improved mental health improved.

Jacka (2011)

Now what?



Benefits of eating enough **protein**

- Better sleep, less early morning waking
- Less fatigue, particularly in the afternoons
- More energy
- Better and more stable moods
- Decreased depression
- Decreased anxiety
- Higher metabolism due to increased muscle mass
- Less frequent hunger

How much protein should I eat?

RDA 0.8 gram/kg/day or 8 grams/20 lbs/day
Max protein per day = 120 grams

Your Weight (lbs)	Protein Target (g)	Acceptable Protein Range (g)
100	40	36-45
120	48	43-54
140	56	50-63
160	64	57-72
180	72	64-81
200	80	71-90

Three days eating ridiculous amounts of protein: protein every 3 hours

8 am Breakfast: 1-2 eggs, 1 piece of toast, 1 apple (14 grams)

11 am Snack: 1 handful of nuts, 1 spoonful of nut butter, or 1 spoonful of cottage cheese (6-8 grams)

12:30 pm Lunch: portion of meat the size of a pack of cards eaten by itself or in a sandwich/wrap, soup, or burrito; 1-2 cups of veggies (21 grams)

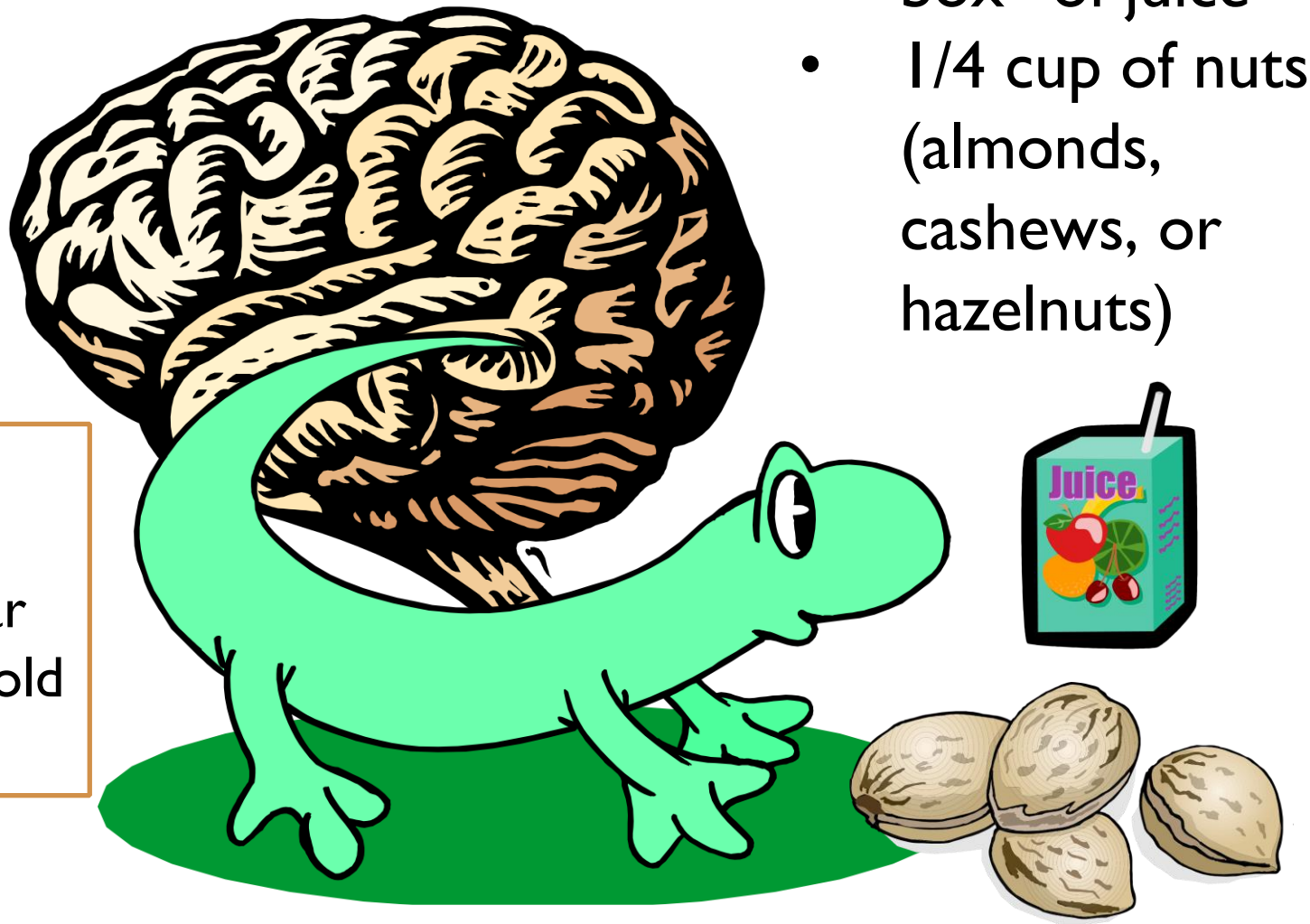
3:30 pm Snack: 1 handful of nuts, 1 spoonful of nut butter, or 1 spoonful of cottage cheese (6-8 grams)

6:30 pm Dinner: portion of meat the size of a pack of cards eaten by itself or in a sandwich/wrap, soup, or burrito; 1-2 cups of veggies (21 grams)

Pre-bedtime Snack: One slice of turkey meat (6-8 grams)

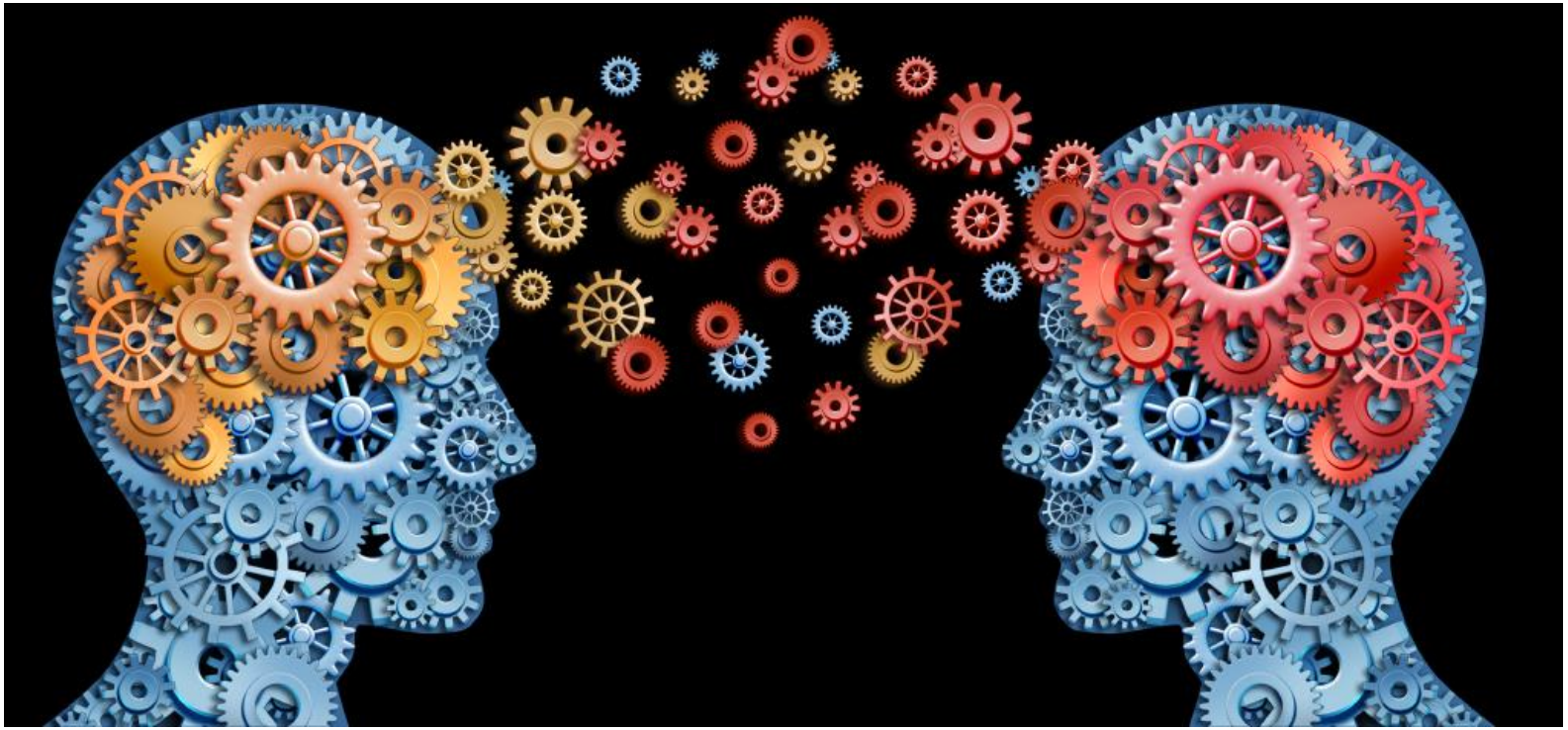
Lizard brain treat

- 1/4 cup of fruit juice or a "tot box" of juice
- 1/4 cup of nuts (almonds, cashews, or hazelnuts)



- Fight
- Flight
- Disappear
- Play the old record

What else?



Sleep Deprivation (< 6.5 hours of sleep per night)

- Increases weight gain
- Increases inflammation and pain
- Increases chronic disease and shortens life
- Decreases attention span and memory
- Decreases associative problem-solving
- **When you don't sleep enough, your cognitive abilities decline and you aren't aware of it**

Recommendations to improve sleep

- Get up at the same time every day
- Take naps (10 to 20 minutes)
- Rule out sleep apnea
- No electronics in the bedroom
- Beds are only for sleep and sex
- Decrease stimuli an hour before bedtime
- Allow 2 weeks for new routine to have a positive impact

To Move or Not to Move

Erikson (2013)

Over 55 years old:

- Decreased bone density
- Decreased cardiovascular and metabolic fitness
- Decrease longevity
- Decreased muscle mass
- Decreased hippocampus
- Decreased prefrontal cortex
- Decreased executive function
- Decreased memory

Exercise after 55 years old:

- Increased bone density
- Increased cardiovascular and metabolic fitness
- Increased longevity
- Increased muscle mass
- Increased hippocampus
- Increased prefrontal cortex
- Increased executive function
- Increased memory

What is a Minimum Metric?

- Walk 10,000 steps (6 miles)
- Be able to sit on the floor and stand up on your own
- Be able to walk up five flights of stairs
- Be able to lift up to 40-lbs. …such as a 40-lb grandchild

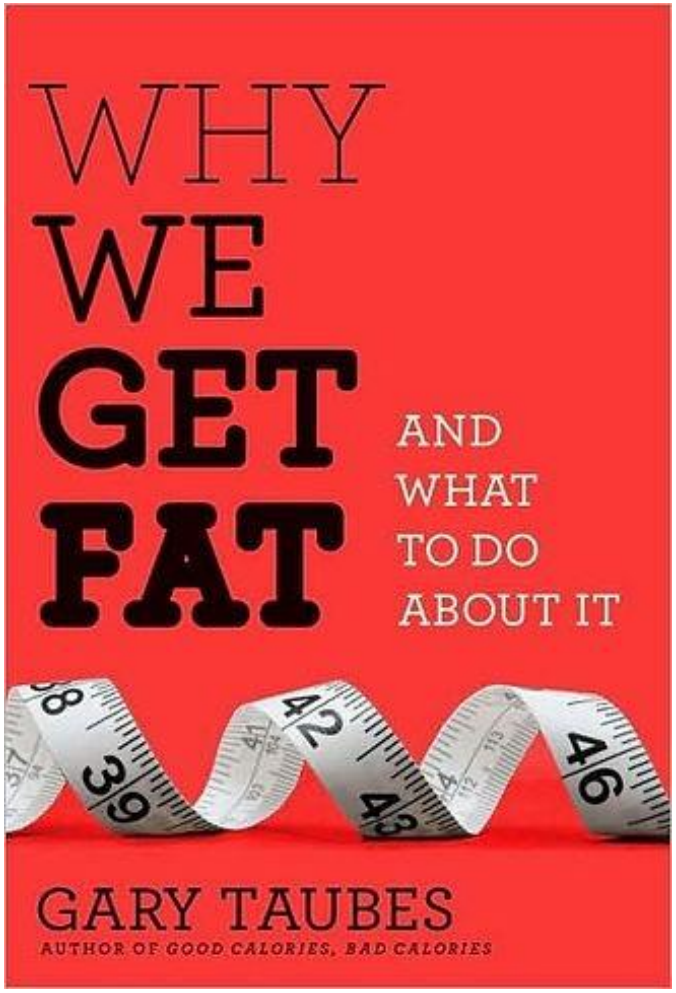
This is what will determine your independent living in the future.

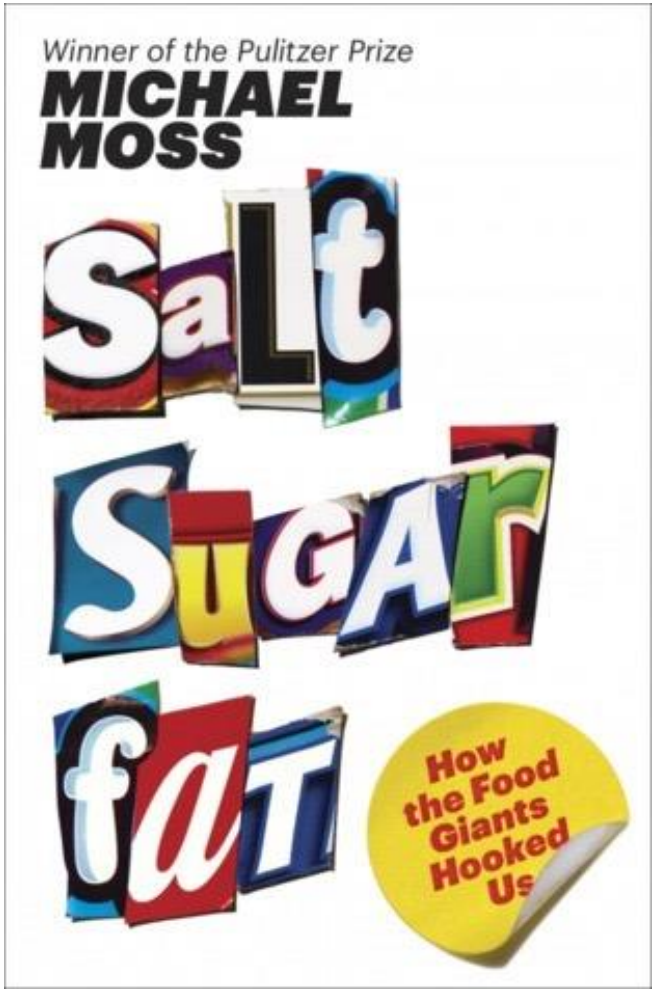
Exercise Plan: One month

- Schedule 10 minutes to move your body each day.
- Buy a pedometer.
- Record pedometer each day. Record numbers, as numbers tend to increase over time.
- Make a list of five things you can do during your 10 minutes to prevent boredom.

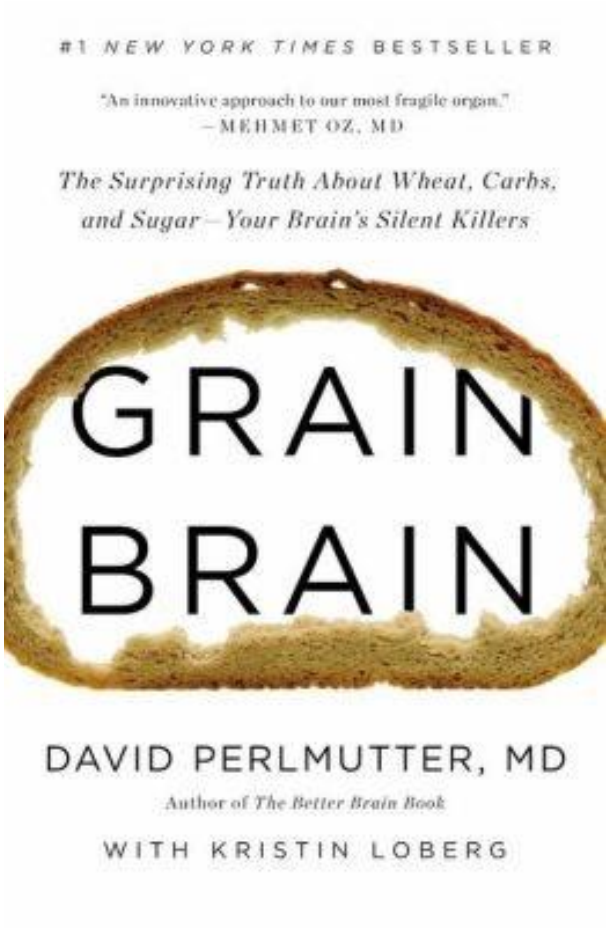
Resources

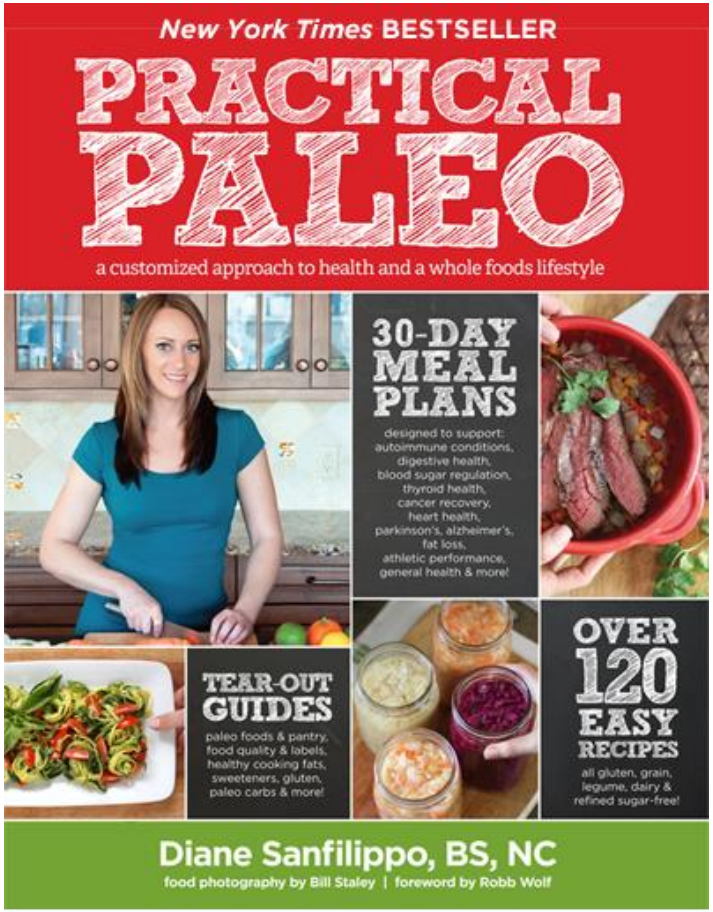
Books


WHY
WE
GET
FAT
AND
WHAT
TO DO
ABOUT IT
GARY TAUBES
AUTHOR OF GOOD CALORIES, BAD CALORIES


Winner of the Pulitzer Prize
MICHAEL
MOSS
SALT
SUGAR
FAT
How the Food Giants Hooked Us

Books


#1 NEW YORK TIMES BESTSELLER
"An innovative approach to our most fragile organ."
—MEHMET OZ, MD
The Surprising Truth About Wheat, Carbs, and Sugar—Your Brain's Silent Killers
GRAIN BRAIN
DAVID PERLMUTTER, MD
Author of The Better Brain Book
WITH KRISTIN LOBERG


New York Times BESTSELLER
PRACTICAL PALEO
a customized approach to health and a whole foods lifestyle
30-DAY MEAL PLANS
designed to support: autoimmune conditions, digestive health, blood sugar regulation, thyroid health, cancer recovery, heart health, parkinson's, alzheimer's, fat loss, athletic performance, general health & more!
TEAR-OUT GUIDES
paleo foods & pantry, food quality & labels, healthy cooking fats, sweeteners, gluten, paleo carbs & more!
OVER 120 EASY RECIPES
all gluten, grain, legume, dairy & refined sugar-free!
Diane Sanfilippo, BS, NC
food photography by Bill Staley | foreword by Robb Wolf

References

- Slide 5: Gailliot MT, Baumeister RF, DeWall CN, et al. Self-control relies on glucose as a limited energy source: willpower is more than a metaphor. J Pers Soc Psychol. 2007;92(2):325-336. doi: 10.1037/0022-3514.92.2.325.
- Slide 6: Gailliot MT, Baumeister RF, DeWall CN, et al. Self-control relies on glucose as a limited energy source: willpower is more than a metaphor. J Pers Soc Psychol. 2007;92(2):325-336. doi: 10.1037/0022-3514.92.2.325.
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