

Intermittent Fasting, Carb Cycling and Weight Management

Brent Agin, MD

Presenter

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CEO/ Founder:

- Trim® Nutrition, Inc.
- MyPracticeConnect™ - Electronic Prescribing Platform & Physician Training
- TeleWellnessMD™
- Teaza® Energy

Medical Director:

- Metabolix Wellness Center- Clearwater, FL
- Novus Medical Detox



State of our Health



- More than 70% of Americans:
 - Currently overweight or obese
 - Taking more medications than vitamins
 - No exercise
 - On a diet at all times and still manage to be overweight or obese
- More than 9% of Americans (30 million) have diabetes

State of our Health

- Diagnosis of chronic disease is on the rise
- Diagnosis of psychiatric illness is at all time high
- Diagnosis of autoimmune disease is increasing
- Substance abuse is at all time high

State of our Health

Overweight and obesity is associated with:

- Circadian Rhythm disorder
- Hormone imbalance
- Gastrointestinal disorders
- Chronic inflammation
- Autoimmune disease
- Top 5 cancers
- Cardiovascular disease
- Diabetes
- Psychiatric disease



Obesity is an EPIDEMIC



- Despite pharmaceutical companies spending billions to find the “magic pill”
- Hundreds of weight loss programs and franchises
- Most obese females over the age of 40 are life time members of Jenny Craig or Weight Watchers
- A growing billion dollar weight loss supplement industry
- Most overweight individuals could design themselves a successful weight loss plan

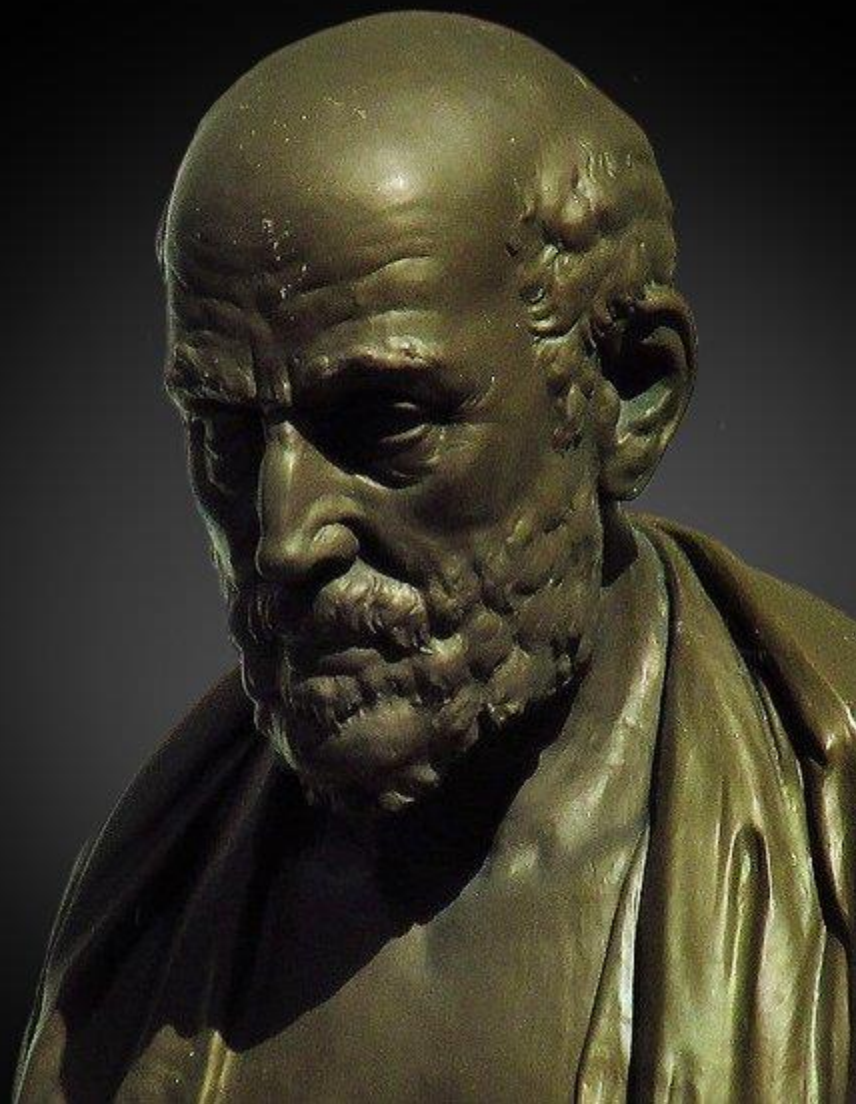
How Do We Treat Obesity



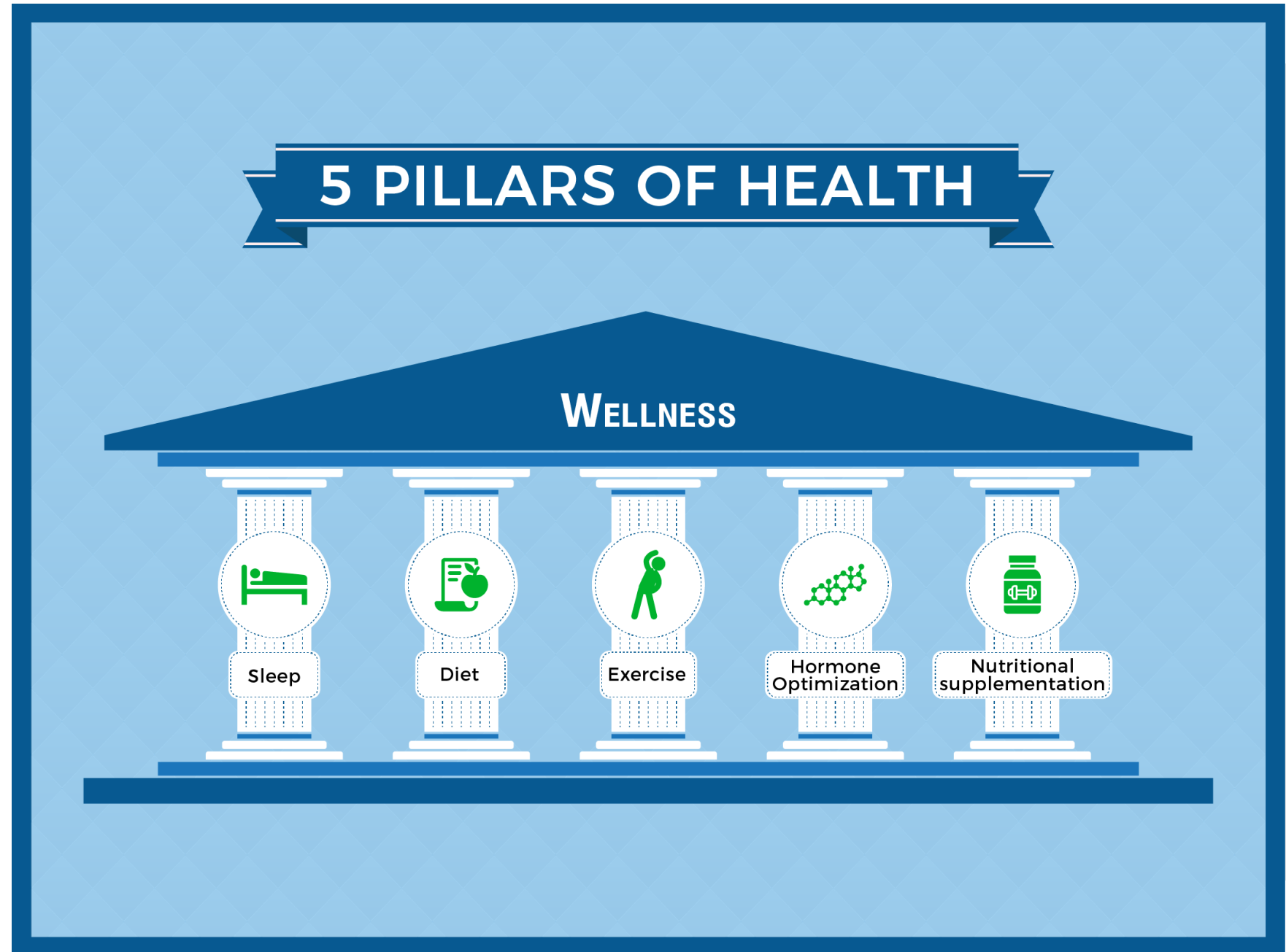
- Obesity is now classified as a disease
- Social pressure has created a movement to accept being overweight and obese as “normal”
- New Challenge: convincing overweight patients that they have a serious disease

If someone wishes for **good health**,
one must first ask oneself
if he is ready to do away
with the reasons for his illness.
Only then is it possible to help him.

– *Hippocrates*



My 5 Pillars of Health



The Top 3 Pillars:

1. Sleep
2. Diet
3. Exercise

- Lifestyle
- Patients have to be the biggest advocates of their own health and wellness
- Adjuvant therapies will help, but must have the top three in place

Supporting Therapies

- Hormone optimization
- Peptide therapies
- Intravenous and injectable nutrient therapies
- Ketogenic eating programs: periodic fasting, intermittent fasting and low carbohydrate diets
- Carbohydrate back loading and cycling
- Nutrient supplementation

Keys to Success

Remove the dieting out of weight loss

- Improve energy
- Improve mood
- Prevent disease
- Lower healthcare costs
- Identifying they are their biggest asset
- Lifestyle is #1– it's FREE

How to Beat Weight Loss Statistics

Keys to Success

- Has to be more than just a diet
 - Energy program
 - Supported by science
 - Direct health benefits
 - Nutritionally balanced
 - Must include exercise
 - Simple to sustain



**To feel the best you can both mentally
and physically – weight loss will follow**

Necessary Components

- Science provides confidence
- Must include all macronutrients
- Exercise driven with realistic exercise options
- Improve health quickly – not just cosmetic
- Has to be more than a diet –must become a way of life

Common Failures

- Eliminating fats and carbohydrates
- Very low calorie diets are not healthy
- Point systems are not sustainable
- Exercise is often left out and sometimes discouraged
- Focus is solely weight loss
- Cannot eliminate carbohydrates but need to control them



Science

- Ketosis
- Fasting – Focus on intermittent fasting
- Healthy Fats
- Carbohydrate Cycling or Back-loading
- Exercise

Science #1

Ketosis

A metabolic process that occurs when the body does not have enough dietary carbohydrates (glucose) for energy so it turns to your stored fat for fuel.

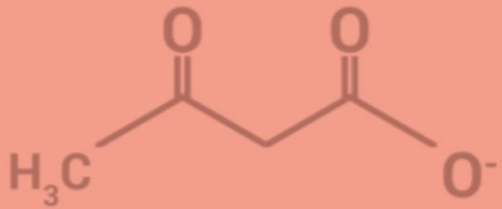
Ketosis

1. Very low carb diet or fasting
2. After a meal as blood sugar normalizes and glycogen stores are depleted
3. Low blood sugar = low insulin levels = increase glucagon and fat oxidation
4. Fatty acids enter the bloodstream and taken up by cells
5. Once in the cells, fatty acids are transported into the mitochondria via beta-oxidation.
6. Beta-oxidation increases Acetyl-CoA
7. Acetyl-CoA is shunted to ketogenesis producing ketone bodies that can be used for energy

TYPES OF KETONE BODIES

There are three types of ketones produced when the body goes into ketosis:

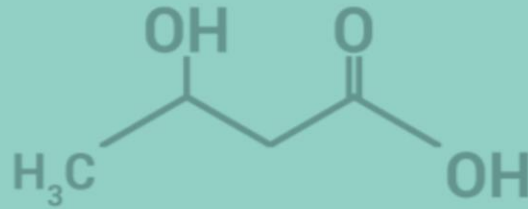
ACETOACETATE



Created first from the breakdown of fatty acids.

It's either converted into BHB or spontaneously turned into acetone.

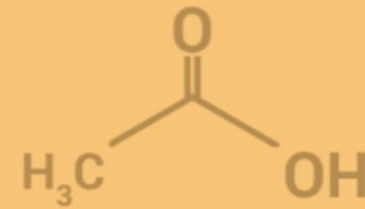
BETA-HYDROXYBUTYRIC ACID (BHB)



Formed from acetoacetate.

BHB is not technically a ketone because of its structure, but we consider it as one within the keto diet.

ACETONE

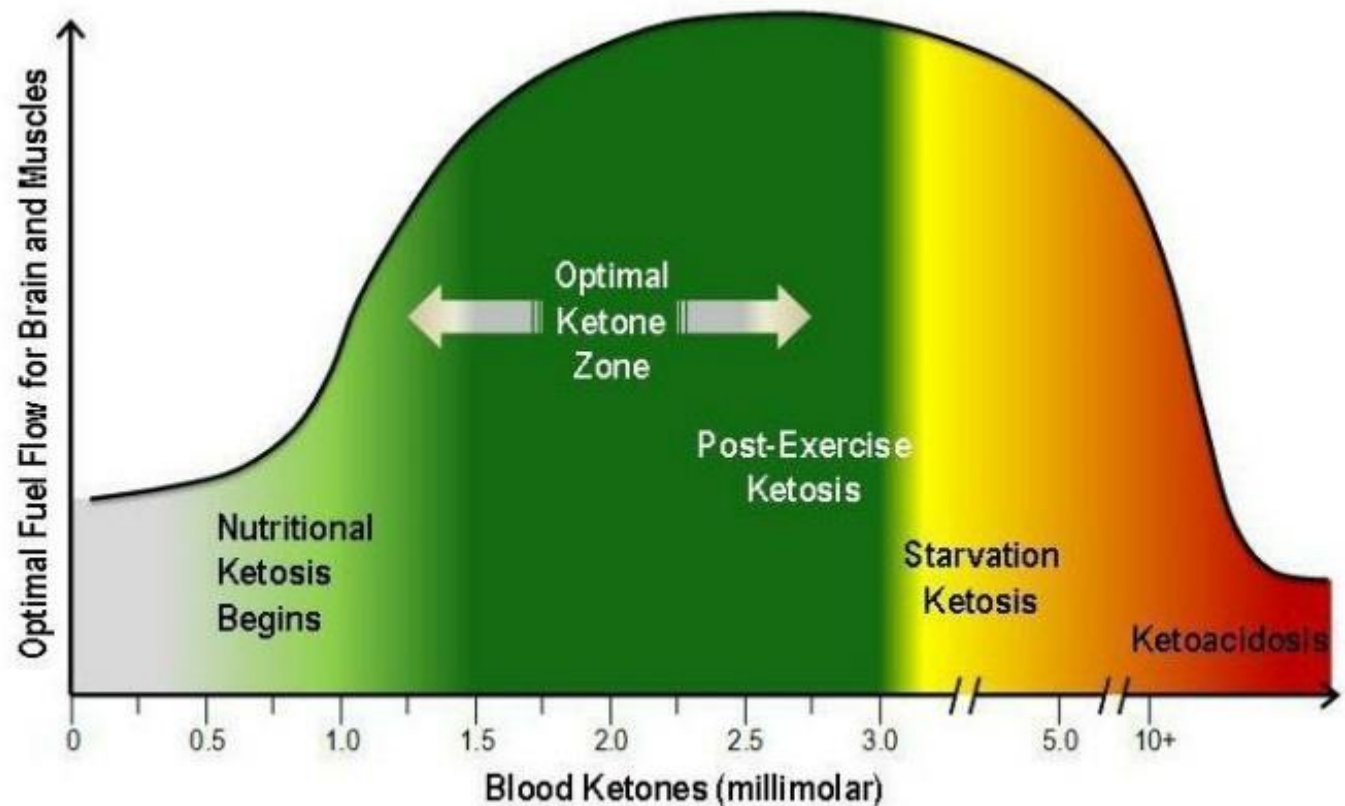


Created spontaneously as a side product of acetoacetate.

Breaks down quickly and is removed from the body through the waste or the breath.

Ketosis

- Ketosis is a normal process during fasting or with low carbohydrate intake
- The body has plenty of stored fat for fuel
- Burning fat for fuel is more efficient for cells



Ketosis

- Lower insulin levels causes greater fat breakdown (lipolysis)
- Normal diet- insulin levels are much higher
- Low insulin stimulates key hormone release
- Powerful natural appetite suppressant

Ketosis

- Diets that promote ketosis support fat reduction, prevent obesity and provide beneficial disease-modifying effects
- Efficient fat loss while maximizing antioxidant and anti-inflammatory actions
- Fat loss is gradual but effective for long term success

Ketosis

- Normalizes defective cellular energy production in the brain and body
- Neurological conditions are linked to low energy production
- Ketogenic diets provides two primary energy sources:
 - Glucose from glycogen stores in the liver
 - Gluconeogenesis, which forms glucose from non-carbohydrate sources and ketone bodies, synthesized from fatty acids in the liver

Ketosis & Muscles

- Muscles need replenished glycogen stores
- Glycogen is key
- Carbohydrates are an important nutrient for the body-removing essential carbohydrates results in:
 - deficiencies of key nutrients
 - shifts the body's innate fat burning mechanisms
- Essential for exercising and trying to lose weight

Solution: eat the right carbs, in the right quantities, at the right times

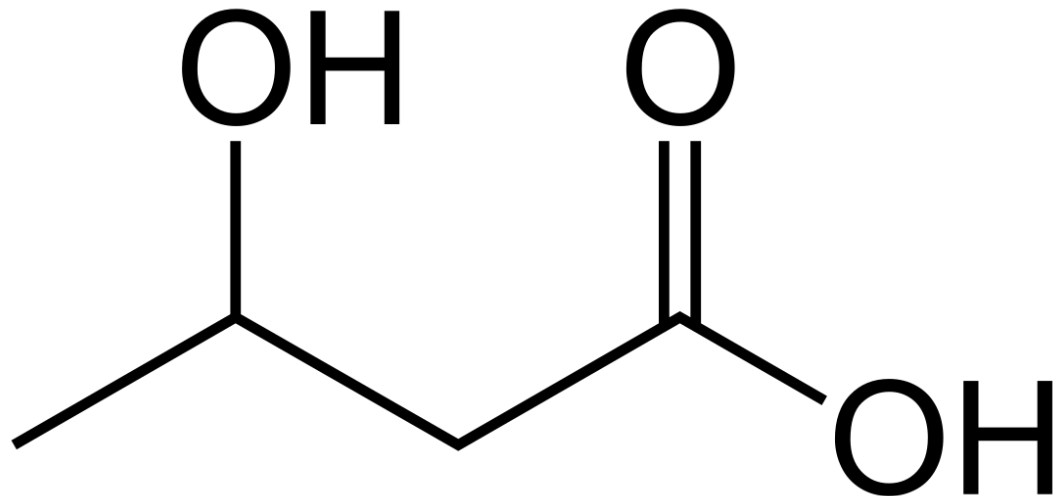


Continuous Ketosis

- Continuous low-carb diets = yo-yo dieting
 - Not a consistent, healthy lifestyle
- Low-carb – cannot maintain muscle mass especially when performing calorie restriction at the same time

Ketones

- Ketone bodies are an efficient fuel for the body and brain
- Beta-Hydroxybutyrate (β -HB) provides more energy than glucose
- Better mitochondria function



Ketones

- Improved mood and cognitive function
- β -HB has a similar makeup to γ -hydroxybutyrate (GHB)
- Reduced brain glucose promotes neurogenesis (growth and development of nerve cells)

Ketosis Health Benefits

- Extremely powerful for disease and age management
- Can replace ineffective pharmacological therapies
- Growing appeal of natural therapies
- Ketosis is most notable and effective dietary treatment for neurological conditions
- The two major health opportunities from ketosis are:
 - Rise in ketone body production by the liver
 - Reduction in blood glucose levels

Science # 2

Intermittent Fasting (IF)



- Not truly a diet
- Strategic meal scheduling
- Facilitates ketosis – low level
- Can avoid the “keto” flu
- Controls eating
- Allows for easy carbohydrate management
- “Bullet” coffee breakfast

Intermittent Fasting



- Creating a period of no food for 12-16 hours
- Easy: Time from your last meal at night until your first meal the next day
- The fasting period
 - Can start with 12 hours
 - Goal is 16 hours
- Ex: Eat last meal 10 p.m. Next meal at 10 a.m., for a 12-hour fasting period

Intermittent Fasting

- Use fat as a fuel - fatty acid oxidation
- Old theory: high-carbohydrate breakfast
 - Causes insulin and glucose levels to spike
 - Shuts off fat-burning for several hours
 - Drives unused calories into fat stores
 - Triggers hunger by spikes of insulin and glucose
- Goal: Ketosis as result of modified carbohydrate intake and fasting

Intermittent Fasting:

Hormone Support

- Insulin – Low in fasted state while glucagon and growth hormone are elevated.
- Human Growth Hormone –Increases growth hormone levels
- Leptin –Regulates leptin the “satiety hormone”.
- Ghrelin –Normalize ghrelin, the “hunger hormone” by acting as a natural appetite suppressant.
- Cortisol –plays a large role in fat burning, naturally highest in the morning.
- Testosterone –Increases luteinizing hormone (LH)

Intermittent Fasting Benefits

- Improves energy
- Rapid shift into ketosis
- Decreases body fat
- Improves insulin sensitivity
- Stimulates hormone production and balance
- Promotes nerve repair & regeneration
- Supports a healthy lean body mass.
- Decreases low-density lipoprotein (LDL)
- Reduces oxidative stress and inflammation
- Lowers risk of heart disease, diabetes, cancer, and aging
- Cell clean up (autophagy) initiating stem cell activity

Science #3

Healthy Fats

- Fat is calorically dense with 9 calories per gram
- More concentrated source of energy than protein and carbs – 4 calories per gram
- Consuming sufficient amounts of healthy fats in the right form is essential for:
 - Immune system and reduction of inflammation
 - Cellular repair
 - Brain function
 - Increase energy and performance
 - Key in regulating body weight
 - Needed to absorb several antioxidants, fat-soluble vitamins A, D, E and K
 - Aids in the formation of hormones

Healthy Fats

- Bad fats - Trans fats (trans fatty acids)
 - Abundant in foods that contain vegetable oil
 - Associated with heart disease and diabetes
- Healthy fats
 - Some saturated fats
 - Unsaturated fats: polyunsaturated and monounsaturated
 - lower cholesterol levels and reduce your risk of heart disease.
 - Polyunsaturated fats (omega-3 fatty acids)
 - fish, walnuts, almonds, and flaxseed
 - Monounsaturated fats- such as avocados
 - Most of an avocado's calories are in the form of fiber and healthy fat

Medium Chain Triglycerides (MCT)

- Coconut oil- healthy saturated fat made up mostly of medium-chain triglycerides (MCT)
 - Better than longer chain fats found in vegetable oils and fatty meats
 - Go straight to the liver, where they are turned into ketone bodies and provide a quick source of energy
- Works good with intermittent fasting

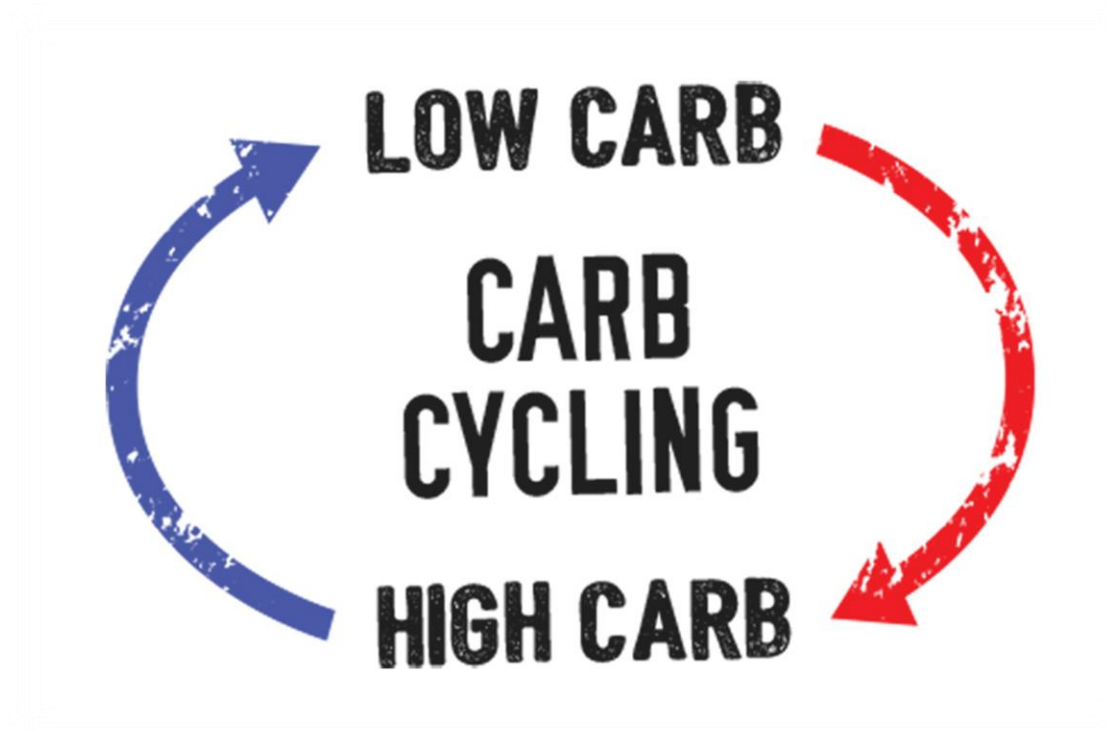
Saturated Fat

- Studies show that saturated fats do not increase risks for heart disease
 - Increase good cholesterol (HDL) levels.
 - Saturated fats can raise LDL (large fluffy LDL)
- Elevated small dense LDL particles accompanied by high triglycerides are a result of high-carb, low-fat diets
- Check lipid particle analysis prior to starting

Science #4
Carb Cycling

Carb cycling:

The practice of consuming varying quantities of carbohydrates at specific days and times



Carb Cycling

- Must have carbohydrates in the diet
- Carb reload days refills important glycogen stores
- Controlled carbohydrate intake can lead to accelerated metabolic state while preserving lean muscle mass
- Fat is lost safely and effectively
- Often cycling is timed around physical exercise
- Cycling = control

Carb Cycling

Carb Cycling:

- Low carb days
- Carb reload nights
- Low carb days = increase insulin sensitivity & fat oxidation
- Carb reload nights:
 - Replenish glucose and glycogen stores
 - Manipulate insulin to push nutrients into muscle
 - Fat burning
 - Long term success
- Carb reload dinners 5-8 p.m. consume carbohydrates of your choice
- Enjoy foods you have sacrificed and remember it will not sacrifice your results

Science #5

Exercise

- Any activity that is more intense than normal daily physical activities and can improve health and wellness.
- Exercise is not the same as being active

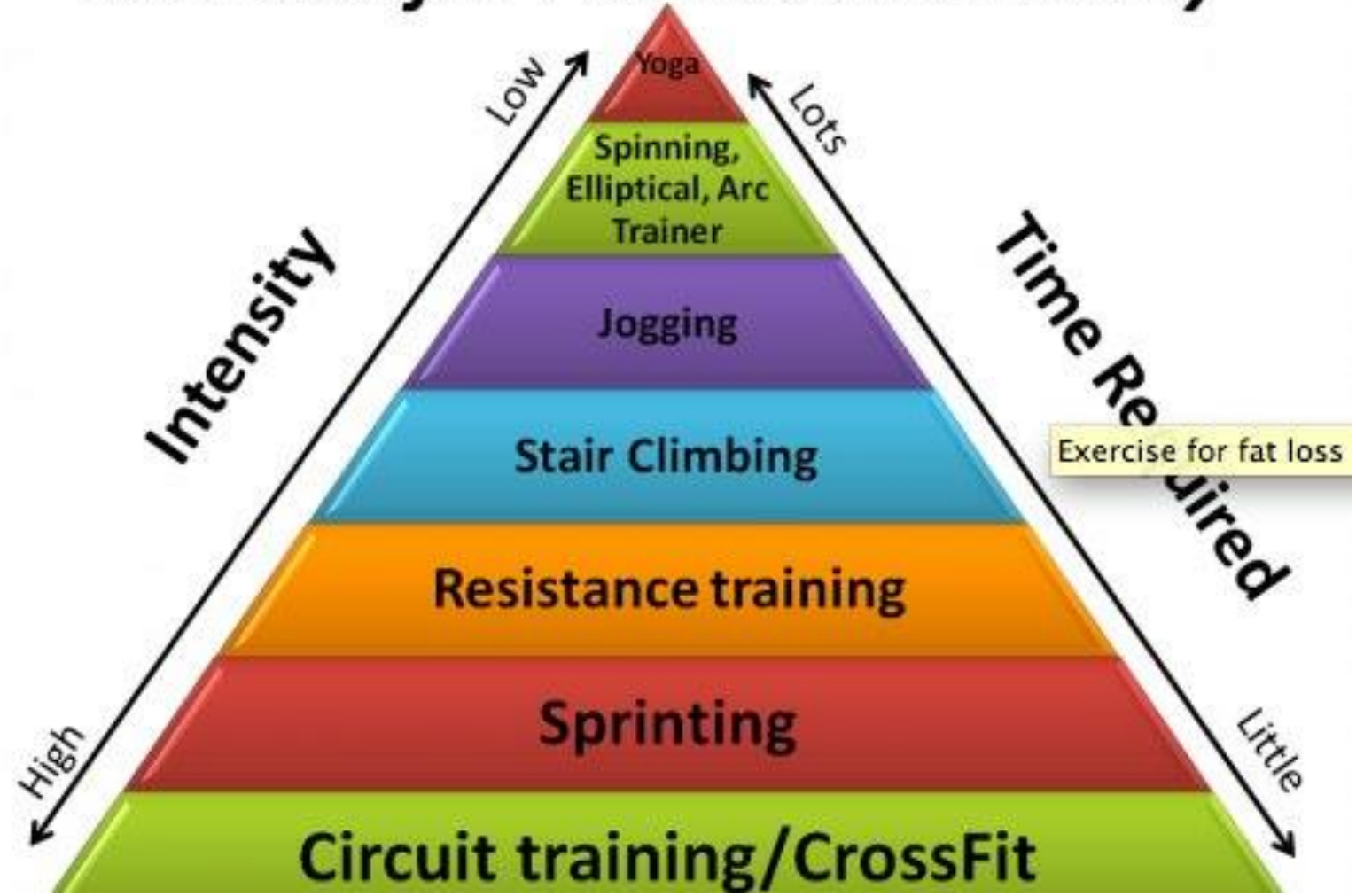


Exercise

- Exercise is a major component of metabolism
- Essential for long term weight loss success
- Strengthens bones and muscles
- Supports mental health
- Decreases risk of chronic disease, especially heart
- Exercise options
 - Aerobic exercise
 - Anaerobic exercise
- High Intensity Interval Training (HIIT)
 - Exercise that combines both aerobic and anaerobic

HIIT
Resistance
Training

Exercise for Fat Loss Hierarchy



Resistance
Training

HIIT

Benefits of High Intensity Interval Training

- Maximizes both aerobic and anaerobic energy
- Focus on building and sustaining lean muscle
- Maximum fat burning
- Improves metabolism
- Time sensitive – 30 minutes or less 3-6 days a week
- No equipment needed and can be done from home
- Multiple exercises
- Can be done outside
- Low risk of injury

Benefits

- Reduction in weight and increase in fat loss
- Reduction in blood triglycerides
- Reduction in blood pressure through vasodilation
- Reduction in markers of inflammation (including CRP, IL-6, TNF)
- Reduction in migraines
- Reduction in oxidative stress
- Reduction in risk of cancer
- Increase in cellular turnover and repair (autophagy)
- Increased growth hormone release
- Improved metabolism

Benefits

- Natural appetite suppression through Ghrelin and Leptin effects
- Improved insulin sensitivity
- Improved muscle building
- Improved cognition and fine motor skills
- Improved hormone balance
- Improved neurotransmitter production
- Reduced inflammation
- Increased nerve generation and protection (neurogenesis)
- Improvement in behavior associated with autism and spectrum disorders
- Modifies disease progression in Epilepsy, Parkinson's, Multiple Sclerosis, and autoimmune disease

Result of Combining Sciences

Feel the best you can both mentally and physically

Now don't change anything!

Supporting Cast

- Sleep
- Nutritional Supplementation
- Hormone Optimization

Sleep

- Important for hormone production and secretion
- Necessary for rest and recovery
- Circadian Rhythm disorder can limit success



Hormones

- Being overweight and obese directly produces hormone imbalances
- Adipose tissue acts as an endocrine gland
- Optimizing hormones improves the other four pillars
- Ignoring hormone imbalance will limit success and can result in weight loss failures

Nutritional Supplements

- Supplements to requirements
- Nobody gets the right amount of fruits and vegetables
- Supplements are quick, easy and calculated
- Protein, fiber and micronutrients

Summary

- Remember the 5 pillars
 - Sleep
 - Diet
 - Exercise
 - Nutritional Supplementation
 - Hormone Optimization
- This is lifestyle medicine – weight comes with it
- Use Science to your benefit
- Must be passionate and result driven

Brent Agin, MD
Age: 48
Father of Two



Jamie Tripp, ARNP-C
Age: 33
Mother of Two



References

- Veech, Richard L. "The Therapeutic Implications of Ketone Bodies: the Effects of Ketone Bodies in Pathological Conditions: Ketosis, Ketogenic Diet, Redox States, Insulin Resistance, and Mitochondrial Metabolism." *Prostaglandins, Leukotrienes and Essential Fatty Acids* 70, vol. 70, 2004, pp. 309–319.
- Moro, T, et al. "Effects of Eight Weeks of Time Restricted Feeding (16/8) on Basal Metabolism, Maximal Strength, Body Composition, Inflammation, and Cardiovascular Risk Factors in Resistance Trained Males." *Journal of Translational Medicine*, vol. 14, 2016, p. 290.
- Mattson, M, et al. "Impact of Intermittent Fasting on Health and Disease Processes." *Ageing Research Reviews*, vol. 39, 2017, pp. 46–58.

Thank You