



dotFIT Masterclass - Top Fitness & Nutrition Myths

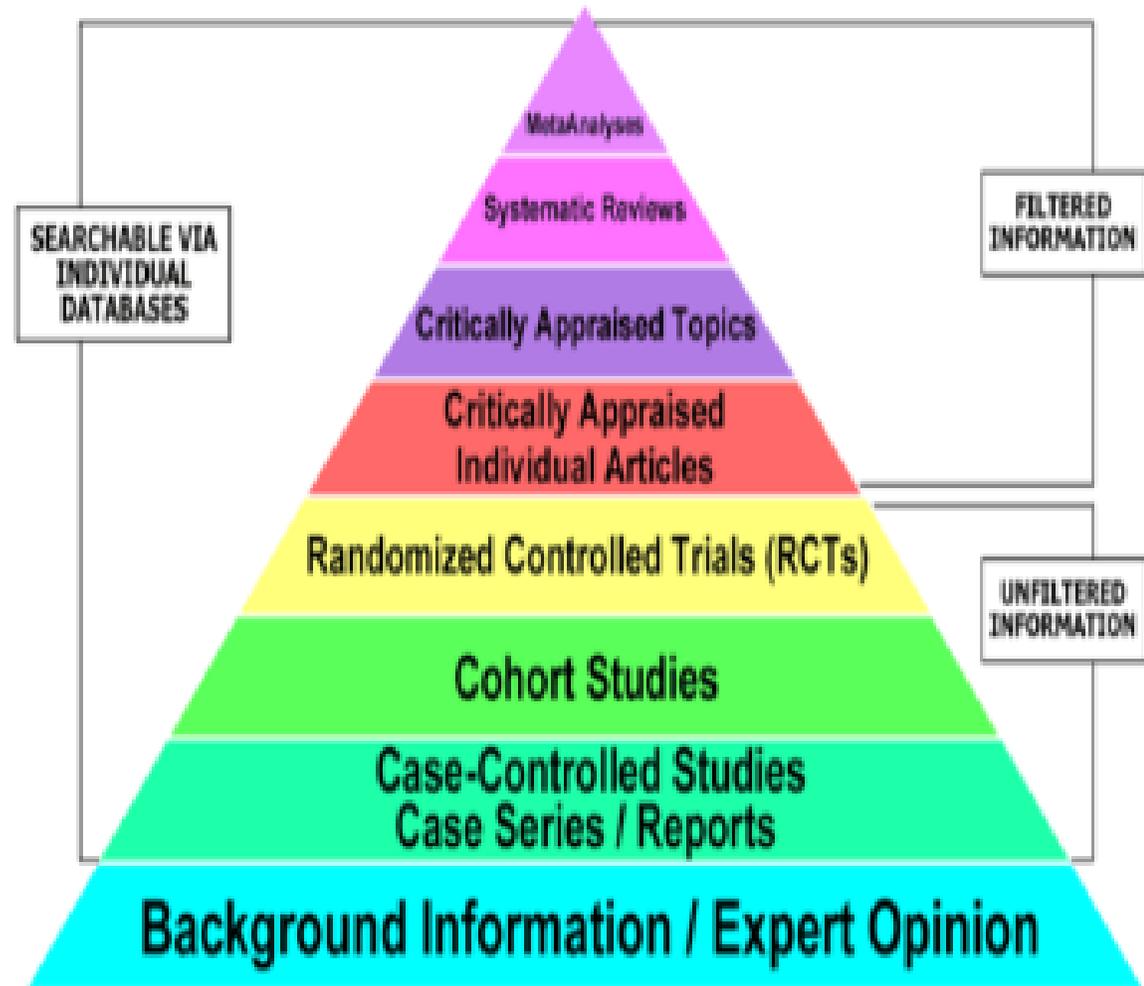


Content to be Presented

- Objective:
 - To provide evidence related to some of the most controversial topics in fitness
- Keto Diet
- High Fructose Corn Syrup
- Sugar & Weight Control
- Alkaline Water
- Artificial Sweeteners
- Natural is Better
- Organic vs. Conventional Food
- Crunches & Six Pack Abs
- Fasted Cardio
- Food Combining

Determining Quality of Information

- Hierarchy of Evidence Provides a Model
- Quality Increases as You Go Up Levels in the Pyramid
- Highest Quality:
 - Systematic Reviews
 - Meta Analysis
- **Research Database - PubMed**



(Bone and Spine, 2015; <http://boneandspine.com/what-is-hierarchy-of-evidence/>, 2015)

Levels of Evidence

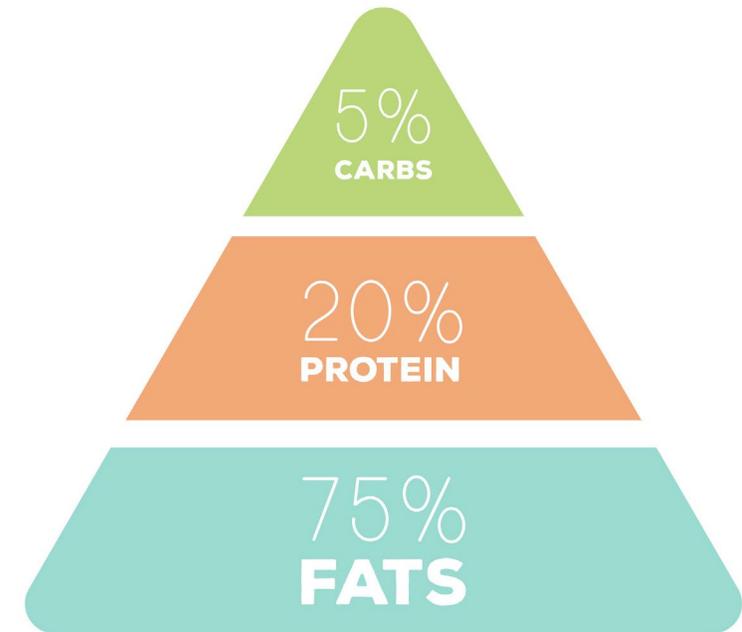
Comparative Grid of the Seven Levels of Evidence

Level 7 Base	Ideas, Opinions, Editorials, Anecdotes.	Least reliable. Basically anecdotal. Unscientific reports and observations (Usher and Fitzgerald 2008)
Level 6	Case Series and Case Reports	Slightly more reliable but there is a potential for bias in recalling information and the quality may be affected if the information is collected retrospectively (Jirojwong and Pepper 2013).
Level 5	Cohort Studies	Becoming more reliable. Observational studies are good at answering questions about prognosis, diagnosis, frequency and aetiology but not questions regarding the effect of an intervention (Del Mar et al 2013 p.24).
Level 4 Middle	Random Control Trials	Very Reliable/ Gold Standard. Random Controlled Trials are able to quantify the effects of intervention hence they are higher up the pyramid than Cohort studies (Koch et al 2008)
Level 3	Critically-Appraised Individual Articles (Article Synopses)	Increasing reliability of findings. A synopsis is the evidence of an individual article with an expert telling you its strengths (Wilczynski and McKibbin 2013 p.43). This is less reliable than Critically Appraised Topics as there is less evidence on single articles than in a synthesis of a topic using several papers.
Level 2	Critically Appraised Topics (Evidence Syntheses)	Very high reliability. Synthesising research publications entails the categorising of a series of related studies, analysing and interpreting their findings and then summarising those findings in to unified statements. The potential lack of standardisation can undermine the validity.
Level 1a/1b Apex	Systematic Reviews and Meta-analysis	The most reliable of all. Systematic reviews, and Meta-analyses, of primary research into human health care and health policy are recognised internationally as the highest standard in evidence-based care (Cochrane Community 2015; Jirojwong and Welch 2013 p.284).

Is the Ketogenic Diet Best for Weight Loss?

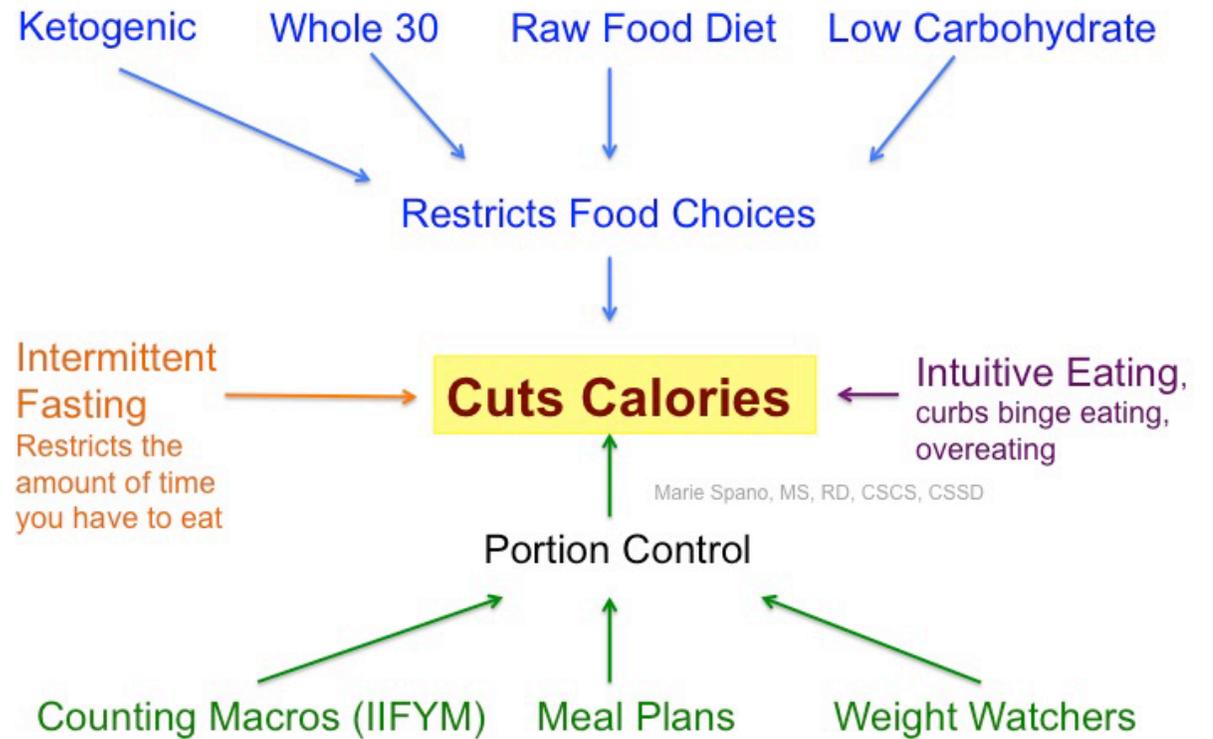
- Limits daily carbohydrate intake to ~50 grams per day
- Results in ketone bodies in the blood
- Typically reduces appetite
- Short term weight loss is superior to other diets
 - Glycogen stores hold water
- Long-term trials show similar weight loss to other diets
 - When calories and protein are matched

KETO DIET



All Diets Have One Thing in Common

ADHERENCE
determines the effectiveness of the diet for weight loss



Research Look – Low Carb Diets

- DIETFITS study
 - “Diet Intervention Examining the Factors Interacting Treatment Success” -Gardner et al., JAMA 2018
 - RCT on low fat vs. low carb diet
 - 1 year, 600 subjects
 - Diet compliance tracked closely
 - Resulted in similar weight loss and health benefits
 - Insulin production did not impact on weight changes

- Watch dotFIT Masterclass “Popular Diets” for a deeper discussion of the research
- <https://www.dotfit.com/dotfittools/masterclass>



Weight Loss Diets Result in Micronutrient Shortages

Diet	Summary - Macronutrient %	Missing Nutrients		Recommended Supplements
Paleo	NO dairy, grains and grain products, legumes, processed foods, alcohol 20-30% Carbs, 30-40% Protein, 40% Fat	Calcium Vitamin D B vitamins	Magnesium Fiber	Multivitamin & Mineral Calcium with Magnesium Vitamin D3
Keto	5-10% Carbs (50 g/d max) 10-20% Protein 70-80% Fat	B vitamins Magnesium Fiber	Vitamin E & C Zinc Iron	Multivitamin & Mineral Calcium with Magnesium AminoBoostXXL Probiotic
Vegan	No animal meats or products (eggs, milk, cheese, yogurt) Higher carbohydrate %	Vitamin D Calcium Protein Zinc	Omega-3 Fats B12 Iron Iodine	Vegan MV Calcium with Magnesium Plant Protein
Gluten Free	All forms of wheat and wheat products. Rye, barley, bulger, some condiments, sauces and dressings	B vitamins Vitamin D Iron Fiber	Zinc Magnesium Calcium Phosphorus	Multivitamin & Mineral Calcium with Magnesium Vitamin D3
Intermittent Fasting	No food restrictions – no eating for a specific time period	Commonly under-consumed nutrients: Potassium, choline, magnesium Vitamins A, D, E, C Calcium, potassium, fiber Iron (for certain age/gender groups)		Multivitamin & Mineral Omega-3 Fish Oils (as needed) Calcium (as needed) AminoBoostXXL Protein
If It Fits Your Macros (IIFYM)	Varies based on individual needs, goals, preferences and training status	Commonly under-consumed nutrients (same as above)		Multivitamin & Mineral Omega-3 Fish Oils (as needed) Calcium (as needed)

Is High Fructose Corn Syrup Worse than Sugar?

- **High Fructose Corn Syrup**

- Contains both glucose + fructose
- 42-55% Fructose
- Higher fructose increases sweetness

- **Table Sugar - "Sucrose"**

- Contains both glucose + fructose
- 50% Fructose

Example: 100 grams of HFCS = 400 calories and 55 grams of fructose vs. 50 grams of fructose in table sugar.

This equates to a +5 gram and 20 calorie difference in fructose.



Research Look – HFCS & Weight Loss + Health Markers

- RCT, double blinded, 247 overweight/obese subjects, 25-60 yrs old
 - 4 groups with 500 calorie deficit for 12 weeks. Macros 50-55% carbs, 15-20% protein + 25-30% fat
 - Group 1 – 10% of calories from HFCS
 - Group 2 – 20% of calories from HFCS
 - Group 3 – 10% of calories from sucrose (table sugar)
 - Group 4 – 20% of calories from sucrose
- They all lost weight – no significant differences between groups.
- They all reduced cholesterol 13 – 19 mg/dL



Research Look – HFCS

- Additional research has shown no difference between HFCS and sucrose on:
 - Glucose
 - Insulin
 - Leptin
 - Ghrelin
 - LDL
 - HDL
 - Triglycerides
 - Appetite
 - Calories consumed at next meal
- Systematic Review Conclusion:
 - Fructose only had an adverse effect on lipid targets when added to existing diets so as to provide excess calories (+21 to 35% energy)

Key
Takeaways
on High
Fructose
Corn Syrup

HFCS and sucrose are similar in glucose and fructose concentrations.

Excess consumption of both can have negative impacts on health.

HFCS and sugar do not prevent weight loss while in a calorie deficit.

- **This debunks the “sugar is fattening” myth**

Do You Need to Avoid Sugar to Lose Weight? — Research Look

- Metabolic and Behavioral Effects of a High-Sucrose Diet During Weight Loss, Surwit et al., *American Journal of Clinical Nutrition*, 1997

- 44 Obese women; Average age 40 yrs
- 6 weeks, 1100 calories, 71% carbs, 19% protein, 11% fat
- All meals provided
- Group 1: 43% of calories from sugar (sucrose)
- Group 2: 4% of calories from sucrose

Sugar & Weight Loss – Research Look

Sample daily menu for the high-sucrose and low-sucrose diets

High-sucrose diet		Low-sucrose diet
Breakfast	(g)	Breakfast
Double-frosted Rice Krispies ¹	21	Aspartame-coated Rice Krispies
Bran Buds cereal ¹	7	Skim milk
1% milk	122	Orange juice
Kool-Aid powder ²	34	Toasted bagel
		Sugar-free jelly
Lunch		Lunch
Thin-sliced white bread	25	White bread
Deli-sliced luncheon beef	16.8	Deli-sliced luncheon beef
Mustard	5	Mustard
Iceberg lettuce	20	Iceberg lettuce
Gelatin dessert	117	Canned peaches, juice pack
Marshmallows	21.6	
Sweet iced tea powder	17	
Dinner		Dinner
Spicy baked cod, cooked	70	Spicy baked cod, cooked
Spinach (salad)	112	Spinach (salad)
Green onions	3	Green onions
Egg whites	33.4	Carrots
Fat-free Italian dressing	26.9	Fat-free Italian dressing
Meringue cookies	228	White rice
		French bread roll

Sugar & Weight Loss – Research Look

Results

- Both groups lost weight and body fat with no significant differences between groups
- Both groups experienced lower:
 - Blood lipids
 - Blood pressure
- Both groups showed decreases in:
 - Depression
 - Negative mood

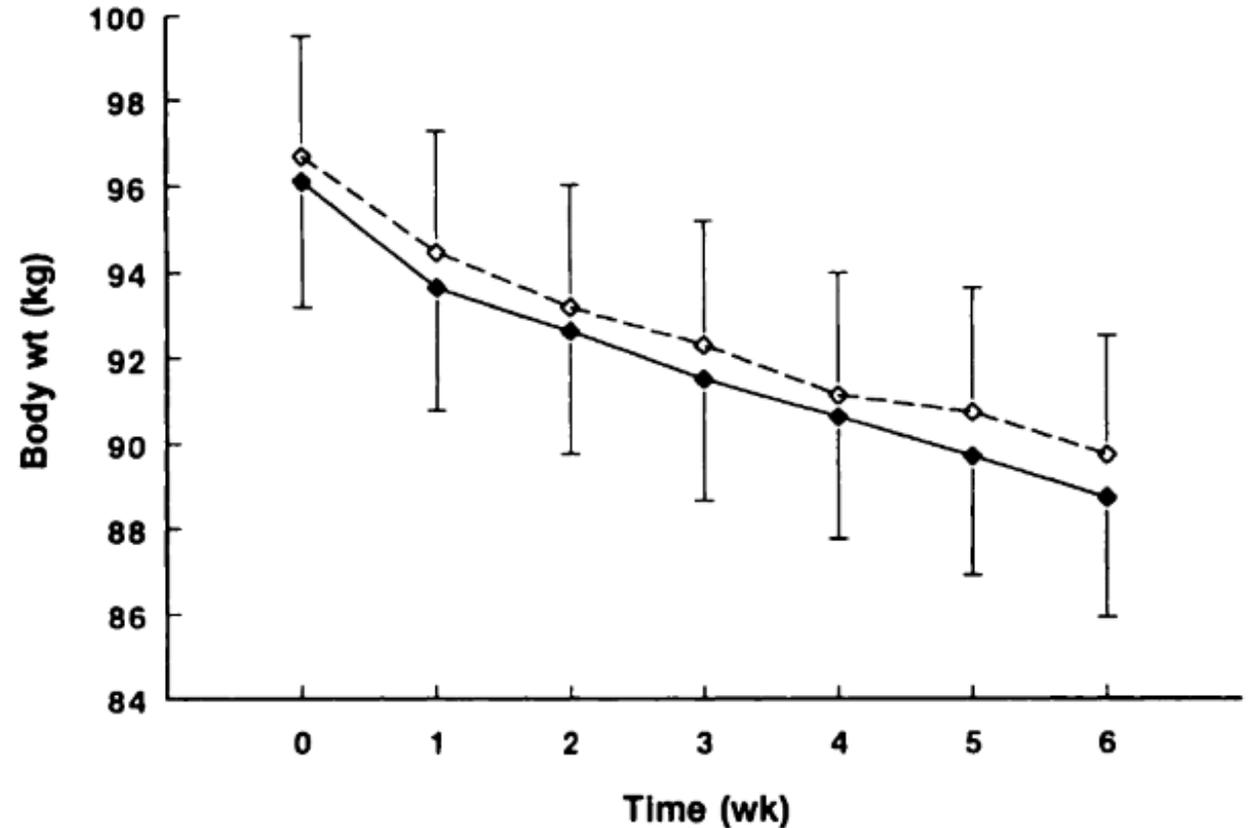


FIGURE 1. Changes in body weight during the diet intervention. Group means and SEs are shown for the high-sucrose (\diamond) and low-sucrose (\blacklozenge) groups.

Sugar does NOT prevent weight loss during a calorie deficit

Alkaline Water – Is there a benefit?



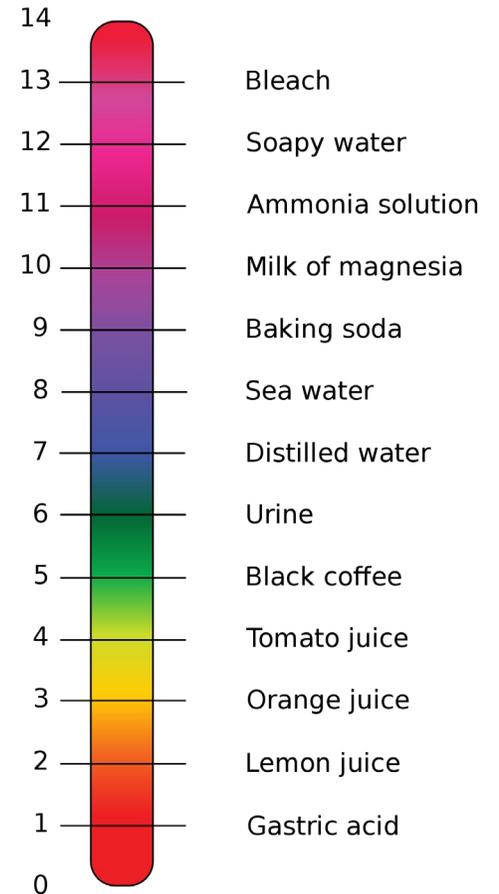
The human body tightly always regulates your blood pH to keep it at 7.35-7.45



pH falls outside this range with severe poisoning, ketoacidosis caused by diabetes, and liver failure

Alkaline Water – Is There a Benefit?

- Normal water - pH of 7
- Alkaline water - pH of 8-9
- No research on the following claims:
 - Anti-aging benefits
 - Supporting immune system
 - Weight loss
 - Detoxifying
 - Preventing cancer



Do Artificial Sweeteners Cause Weight Gain, Cancer & Other Health Problems?

Several have been researched extensively and approved for use in the U.S and/or European Union:

- Aspartame
- Sucralose
- Acesulfame-K
- Saccharin
- Stevia

Pros:

- 200+ times sweeter than sugar with zero calories
- **Replacing refined sugar with artificial sweeteners have been shown to reduce calories and support weight management**

Aspartame

- Equal, NutraSweet, Sugar Twin
- Made from two amino acids – aspartic acid + phenylalanine
- Methanol is produced in small quantities.
 - Methanol is toxic in large quantities
- Fruit, fruit juice, some veggies and fermented foods also produce methanol
- Over 600+ studies conducted in 90 countries
- Research on diseased rats given mega dosages caused cancer
- Approved by:
 - Food & Drug Administration
 - United Nations Food & Agriculture Organization
 - World Health Org
 - American Heart Assn
 - Academy of Dietetics & Nutrition
 - European Food Safety Authority
- **Acceptable Daily Intake set at 22.7 mg/kg bodyweight**
 - **18 diet sodas/day**
 - **75 packets of NutraSweet for 132 lb person**
- Should be avoided by those with PKU, a rare inherited disease

Saccharin

- Sweet N Low, Sweet Twin, Tab and other fountain drinks
- In rats, glucose metabolism is impaired
- In humans given high dosages, fecal transplant to rats lowered glucose tolerance
 - Dose equivalent to 10 packets of Sweet N Low and 4 cans of Tab
- Acceptable Daily Intake – 22.7 mg/lb of bodyweight
 - 9-10 packets

Stevia

- Natural sweetener derived from stevia plant – Truvia, Purvia
- Products vary in quality
 - Some highly refined
 - Combined with other sweeteners
 - Truvia – a stevia blend, highly processed
 - Green leaf stevia – least processed form

Approved by:

- FDA
- European Food Safety Authority

Acceptable Daily Intake – 1.8 mg/lb of body weight

- 9 packs a day for 150 lb adult

Sucralose

- Splenda
 - Made from sugar
- Most not absorbed – excreted intact. Some pass-through the GI tract; eliminated through the urine
- Study in rats observed changed in gut bacteria
 - No studies in humans yet
- **Acceptable Daily Intake - 2.2 mg/lb of bodyweight**
 - **23 packets for 132 lb person**

Common Myths – Natural is Better

Myth:

Artificial Sweeteners Cause Cancer or other Health Problems

Actual:

They don't, but the natural sweeteners they replace might¹

Natural doesn't always mean healthy or safe.

Natural food allergies kill, sicken and added natural sugar can cause obesity and NNS show none of the above

ITEM _____

ALLERGEN WARNING

DAIRY EGGS

PEANUTS FISH

TREE NUTS SOY

SHELLFISH WHEAT

GLUTEN

OTHER _____



Natural Ingredients/Foods & Adverse Events range from mild (e.g. hives, itching, etc.) to severe (e.g. ER visit, death –anaphylactic)

¹Chazelas, et al. Sugary drink consumption and risk of cancer: results from NutriNet-Santé prospective cohort. *BMJ* 2019;365:I2408. <http://dx.doi.org/10.1136/bmj.I2408>

COMMON POWDER FAQs



Q: Why artificial sweeteners? *Not included in All Natural WheySmooth, Unflavored & BestPlantProtein*

A: Better and healthier than sugar and FDA Approved (Ref. Sweetener docs [here.](#))

- ✓ Better taste = continued use to improve fitness results
- ✓ Higher nutrition per calorie/sweetness to support desired body comp
 - Sucralose tested best of sweeteners & sucrose in weight management [Ref](#)
- ✓ Supports blood sugar (approved for diabetics)
- ✓ Decrease risk of adverse reactions common with “natural” sweeteners (honey, stevia, lactose, fruit sugar residues, etc.)^{27,28}
- ✓ Supports weight control vs contributor²
- ✓ Approved for children¹

The FDA established an acceptable daily intake (ADI) for sucralose of 5 milligrams per kilogram (Europe is 7 and Canada 11mg/kg) of body weight (mg/kg) per day*. **The ADI represents an amount 100 times less than the quantity of sucralose found to be safe in research studies. For a person weighing 150 pounds (68 kg), US ADI equates to 340 mg of sucralose—the amount found in nine cans of diet soda or more than 28 individual packets of sucralose—consumed, on average, every day over a lifetime.*

¹Policy Statement FROM THE AMERICAN ACADEMY OF PEDIATRICS. The Use of Nonnutritive Sweeteners in Children. PEDIATRICS Volume 144, number 5, November 2019:e20192765.

²Higgins et al. A randomized controlled trial contrasting the effects of 4 low-calorie sweeteners and sucrose on body weight in adults with overweight or obesity. *Am J Clin Nutr* 2019;109:1288–1301

FYI: *Because of its safety, EFSA decided to expand the sweetener’s use in foods for special medical purposes for children.*

E 955. EFSA Journal. [http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1831-4732](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1831-4732)

Are Organic Foods More Nutritious than Conventional Foods?

Organic Farming:

- Pesticides are used
- List of “allowed substances available www.ecfr.gov
- Electronic Code of Federal Regulations

Title 7: Agriculture
PART 205—NATIONAL ORGANIC PROGRAM

Subpart G—Administrative

Contents

THE NATIONAL LIST OF ALLOWED AND PROHIBITED SUBSTANCES

- §205.600 Evaluation criteria for allowed and prohibited substances, methods, and ingredients.
- §205.601 Synthetic substances allowed for use in organic crop production.
- §205.602 Nonsynthetic substances prohibited for use in organic crop production.
- §205.603 Synthetic substances allowed for use in organic livestock production.
- §205.604 Nonsynthetic substances prohibited for use in organic livestock production.
- §205.605 Nonagricultural (nonorganic) substances allowed as ingredients in or on processed products labeled as “organic” or “made with organic (specified ingredients or food group(s)).”
- §205.606 Nonorganically produced agricultural products allowed as ingredients in or on processed products labeled as “organic.”
- §205.607 Amending the National List.
- §§205.608-205.619 [Reserved]

Is Organic Better? – Research Look

2019 Systematic Review of 35 studies.

- Most were observational.
- Few directly measured health outcomes from organic food consumption.
- Trials were short term
- Organic foods were found to contain fewer pesticide residues



Review

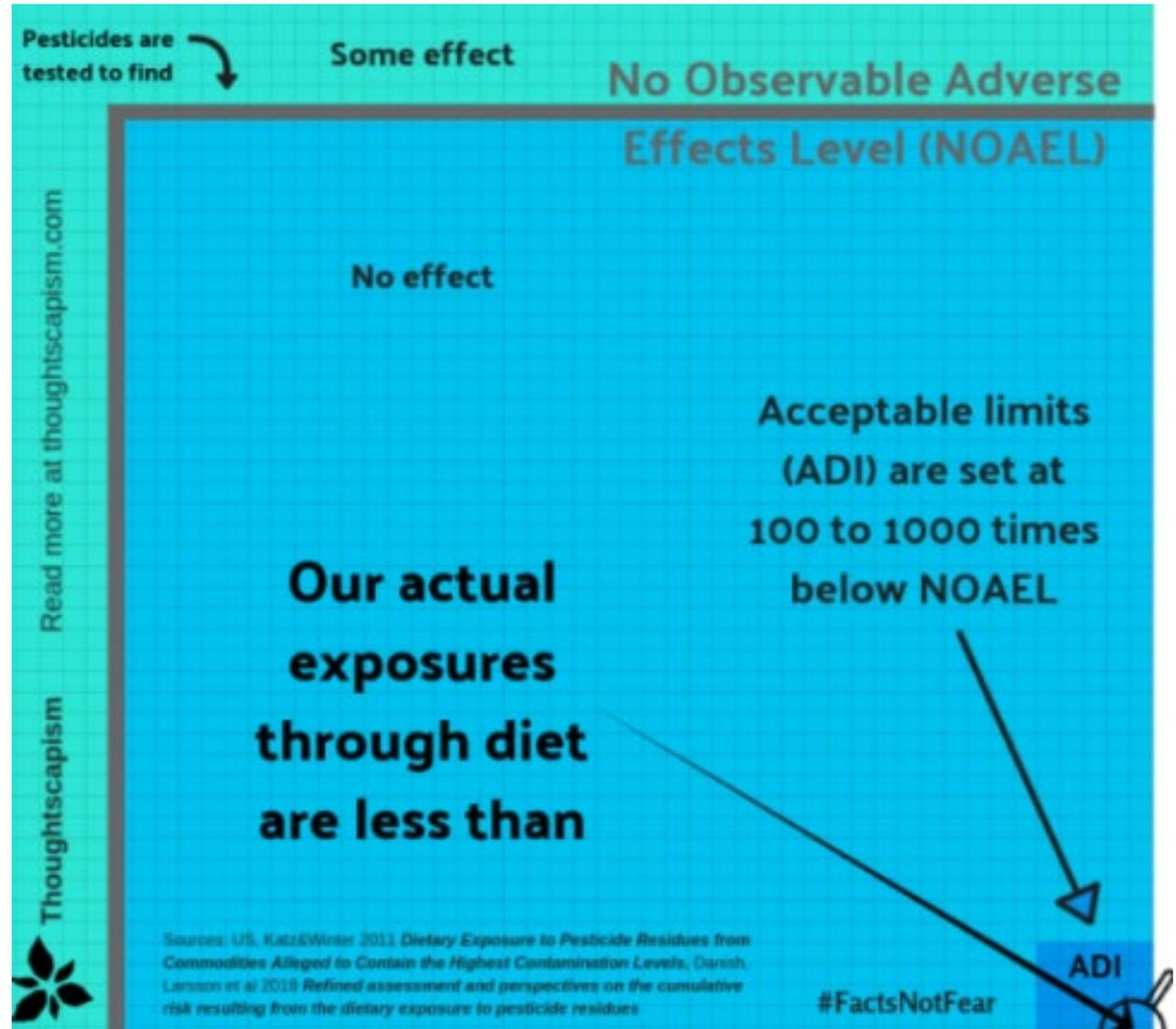
A Systematic Review of Organic Versus Conventional Food Consumption: Is There a Measurable Benefit on Human Health?

Vanessa Vigar ^{1,2,3,4}, Stephen Myers ^{1,3,4,*} , Christopher Oliver ^{1,3,4,5} , Jacinta Arellano ³, Shelley Robinson ^{1,3,4} and Carlo Leifert ⁴ 

Conclusion: The current evidence does not allow a definitive statement on the health benefits of organic dietary intake. More research is needed.

Aren't Pesticides and Chemicals Toxic?

- Organic foods and conventional foods both have similar levels of pesticide residues.
- Neither contains dosages that are toxic



ADI = Acceptable Daily Intake
Incorporates a HUGE safety margin

Are Crunches the Only Way to Get Six-Pack Abs?

Assumption - doing exercises for a specific muscle group will force the body fat over the muscle to go away.



Crunches for Six Pack Abs – Research Look

Vispute et al., Journal of Strength & Conditioning Research, 2011

THE EFFECT OF ABDOMINAL EXERCISE ON ABDOMINAL FAT

SACHIN S. VISPUTE,¹ JOHN D. SMITH,² JAMES D. LECHEMINANT,³ AND KIMBERLY S. HURLEY⁴

¹Department of Kinesiology & Health Education, Southern Illinois University Edwardsville, Edwardsville, Illinois;

²Department of Health & Kinesiology, Texas A&M University-San Antonio, San Antonio, Texas; ³Department of Exercise Sciences, Brigham Young University, Provo, Utah; and ⁴School of Physical Education, Sports & Exercise Science, Ball State University, Muncie, Indiana

- 24 healthy subjects; Maintenance diet for 6 weeks
- Control group – no ab exercises
- Ab exercise group, 5 times/week:
 - 7 exercise, 2 sets of 10 each
 - Abdominal crunches
 - Bent knee sit up
 - Lateral trunk flexion
 - Leg lifts
 - Oblique crunch
 - Twists on stability ball
 - Crunches on stability ball

Crunches for Six Pack Abs – Research Look

The purpose of this study was to investigate the effect of 6 weeks of abdominal exercises on abdominal fat. Six weeks of abdominal exercises in the AG resulted in a greater abdominal endurance compared to the CG; however, abdominal exercise did not result in change in measures of abdominal fat (android fat measured by DXA, waist circumference, abdominal skinfold) compared to the CG.

Spot Reducing is a Myth

	Pre		Post	
	Control	Exercise	Control	Exercise
Body weight (kg)	70.4 ± 9.8	68.9 ± 10.2	70.8 ± 10.1	69.4 ± 11.4
BMI (kg·m ⁻²)	24.5 ± 3.6	24.7 ± 3.1	24.6 ± 3.5	24.8 ± 3.0
Total body fat (%)	35.6 ± 9.3	35.9 ± 8.8	35.3 ± 9.6	34.8 ± 8.3
Android fat (%)	43.1 ± 9.3	43.5 ± 9.1	46.8 ± 6.6	42.3 ± 9.1

Should I be Doing Fasted Cardio?

- During fasted cardio, the body relies more on fat stores for energy = higher fat oxidation rate, AKA more “fat burning”
- Does higher “fat burning” during fasted exercise result in greater weight loss?



Fasted vs. Fed Cardio & Fat Loss – Research Look

- 4 weeks, 20 young women
- Randomly assigned to:
 - Group 1: Fasted for 12 hours + exercise + carb/protein shake* after
 - Group 2: Carb/protein shake prior to exercise
 - Exercise = 1 hour of steady state cardio on treadmill, 3 times/week
 - No other structured exercise
- 500 calorie deficit + Protein = 0.8 g/lb of bodyweight + 25-35% Fat

Schoenfeld et al. *Journal of the International Society of Sports Nutrition* 2014, **11**:54
<http://www.jissn.com/content/11/1/54>



RESEARCH ARTICLE

Open Access

Body composition changes associated with fasted versus non-fasted aerobic exercise

Brad Jon Schoenfeld^{1*}, Alan Albert Aragon², Colin D Wilborn³, James W Krieger⁴ and Gul T Sonmez¹

*Shake: 250 calories, 40 g carbs, 20 g protein, 0.5 g fat

Fasted vs. Fed Cardio – Research Look

FASTED Group:

- Mean age 21.7 yrs
- 1,236 calories/day

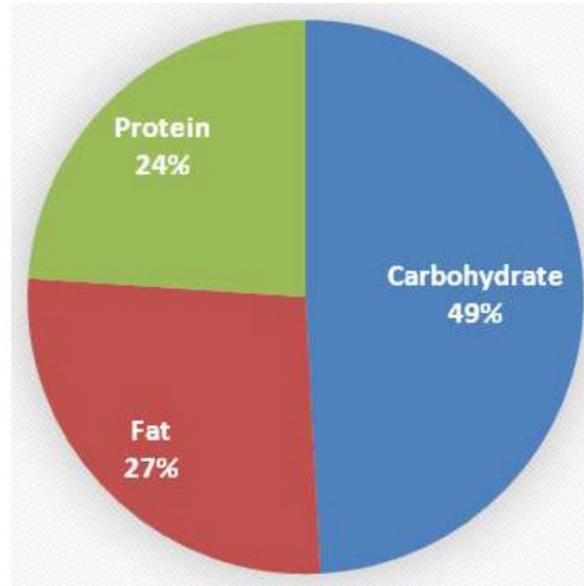


Figure 1 Percent macronutrient intake for FASTED.

FED Group:

- Mean age 23.8 yrs
- 1,277 calories/day

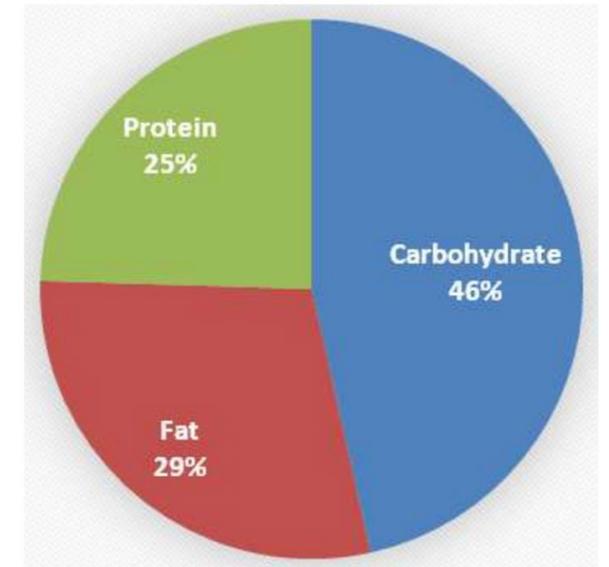


Figure 2 Percent macronutrient intake for FED.

Both groups lost weight and fat mass. There were no significant differences between the groups

Is Mixing Carbs, Protein and Fat Bad for Digestion?

- Digestive enzymes produced in the stomach, pancreas and small intestine + bile from the gall bladder are released in response to the presence of food
 - Amylase – breaks down starch and carbs into sugar
 - Pepsin + proteases - break down protein into amino acids
 - Lipases –break down fats and oils into glycerol and fatty acids



The Impact of Ultra-Processed Foods

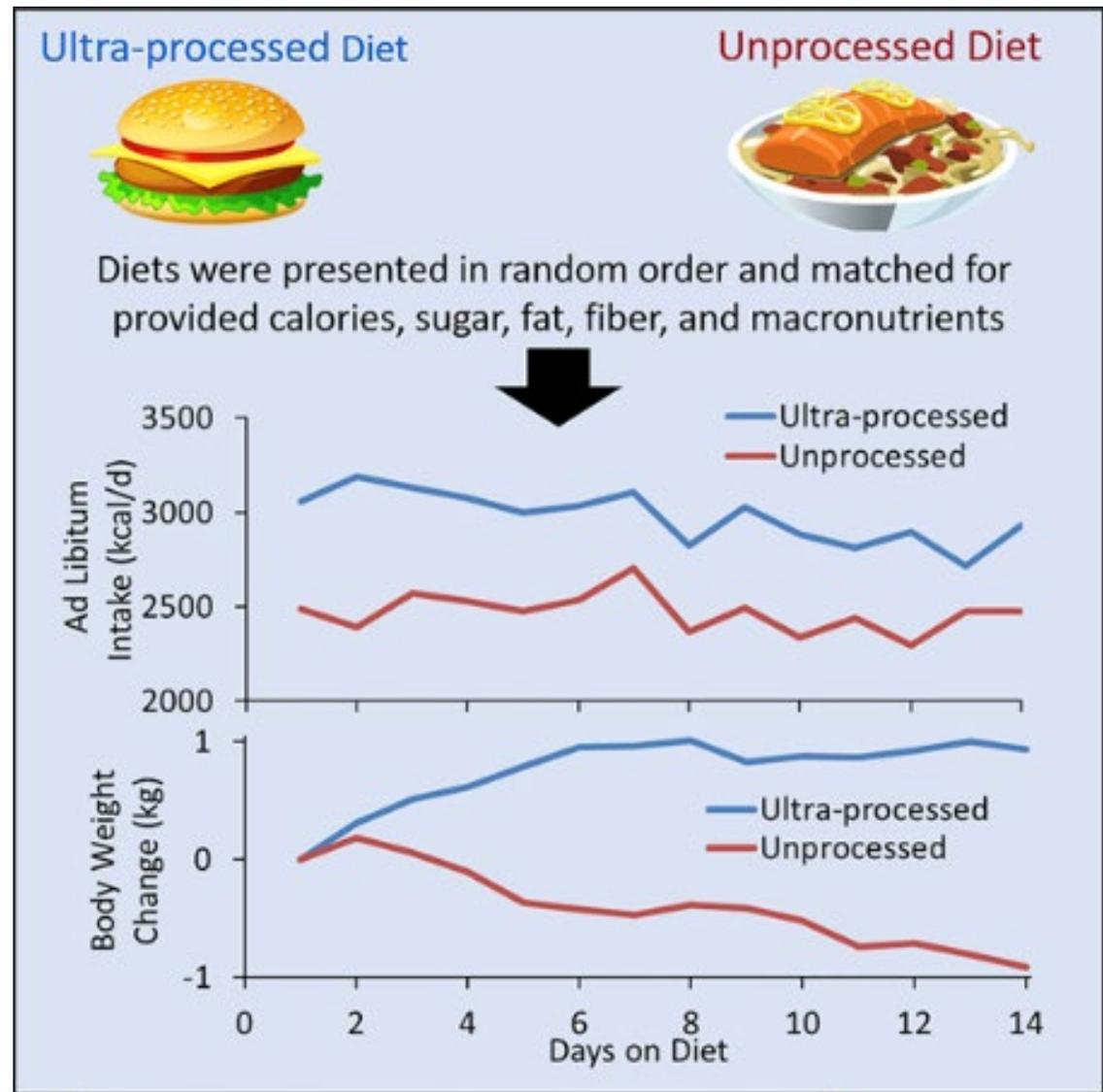
20 subjects, 2 weeks, Diets given in random order:

- Diet 1: Ultra-processed foods
- Diet 2: Unprocessed foods
- Volunteers ate as much as they wanted

Ultra-processed diet resulted in:

- 500 more calories consumed/day
- 2 lb weight gain

Unprocessed diet resulted in 2 lb weight loss



It's easier to consume extra calories and gain weight from ultra-processed diets

BOOM! Myths Busted 😊



The recording and slides will be posted on our site early next week.

www.dotFIT.com/dotfitools/masterclass



dotFIT Certification is currently FREE – Earn CEUs



Join us on Instagram and Facebook “dotFIT Champions” for live events every week





Safe and Effective Nutrition
Solutions to Help You and
Your Family **Grow Strong,**
Play Longer and Live Better

