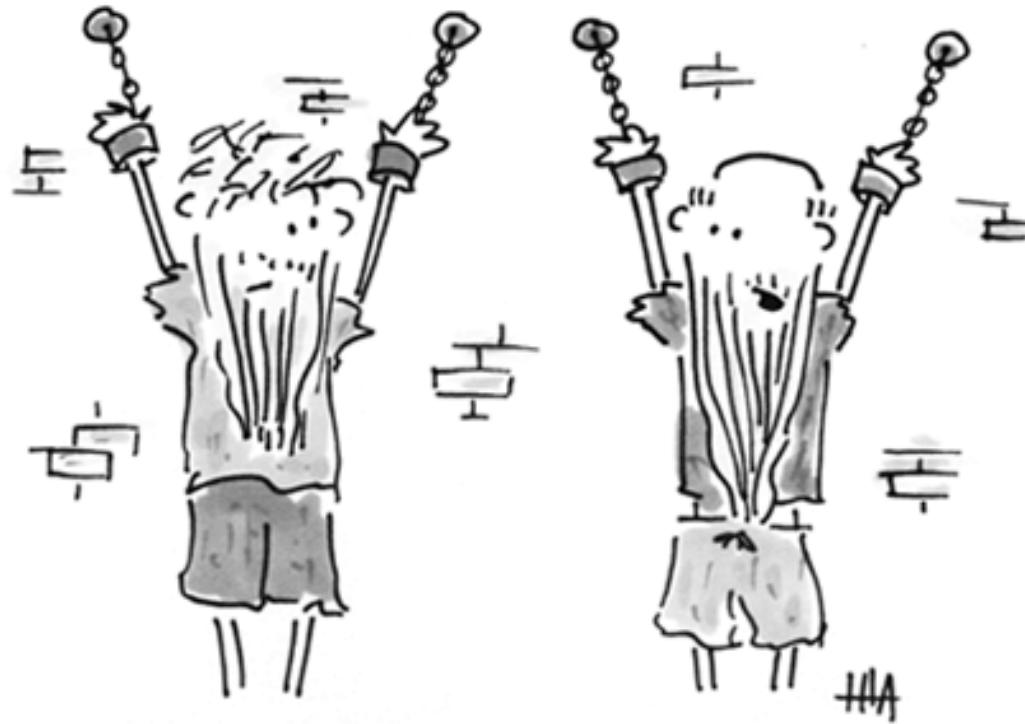


# LOW-CARB DIETS

CARLY DAVIS, MS, RDN, LD

© MARK ANDERSON

WWW.ANDERTOONS.COM



"Just my luck! Nothing but bread and water and I'm on that low carb diet!"

# LOW CARBOHYDRATE DIETS

- Defined
  - Low-carbohydrate diets restrict caloric intake by reducing the consumption of carbohydrates to 20 to 60 g per day (American Academy of Family Physicians, 2006)
  - Typically less than 20 percent of the daily caloric intake
- Limit carbs to burn alternative fuel
- Became popular in the 1990s-2000s
  - Atkins Diet, South Beach Diet, Zone Diet
- Still popular today
  - Paleo, Whole30, Bulletproof Diet

# PROBLEMS WITH LOW CARB DIETS

- Loss of glycogen in muscle tissue and liver results in weight loss (but its mostly water!)
  - Easily regained
- Limits healthy carbohydrates like whole grains, legumes, and fruits
- Encouraged to replace carbohydrates with food sources that are typically high in saturated fat and cholesterol (meat, eggs, poultry)
- Usually inadequate in fiber
  - Stabilizes blood sugar
  - Feeds the gut microbiome
  - Lowers LDL cholesterol
  - Aids in satiety and fullness



ALL CARBS  
ARE NOT  
CREATED  
EQUAL



# TAKEAWAYS

- Beware of diets that demonize any particular macronutrient (we need them all!!)
- Don't be scared of fruit (rich source of fiber, antioxidants, phytochemicals)
- Limit refined carbohydrates (white rice, white bread, cookies, cakes, pastries, etc) and replace with whole grains (oats, brown rice, wheat, quinoa, amaranth, sorghum, etc.)
- Carbohydrates are the brain's fuel source of choice
- The quality of the diet is not in what we are limiting but what we are actually eating





**THE  
MEDITERRANEAN  
DIET**

# MEDITERRANEAN DIET

- No universal definition
  - Italians vs Greeks vs French
- Share many of the same principles
- Blue Zones
  - Areas around the world who live the longest and have lowest rates of disease<sup>1</sup>
  - 2 of 5 in the Mediterranean
    - Sardinia, Italy, and Ikaria Greece





# MEDITERRANEAN DIET

- High intake of vegetables, legumes, fruits, and cereals
  - High intake of unsaturated fatty acids (mostly in the form of olive oil)
  - Low intake of saturated fatty acids
  - Moderately high intake of fish
  - Low-to-moderate intake of dairy products (mostly cheese or yogurt)
  - Low intake of meat and poultry
  - Regular but moderate amount of ethanol, primarily in the form of wine and generally during meals.
- Ranked #1 Diet by the US News and World Report tied with DASH Diet



## Mediterranean Diet Pyramid

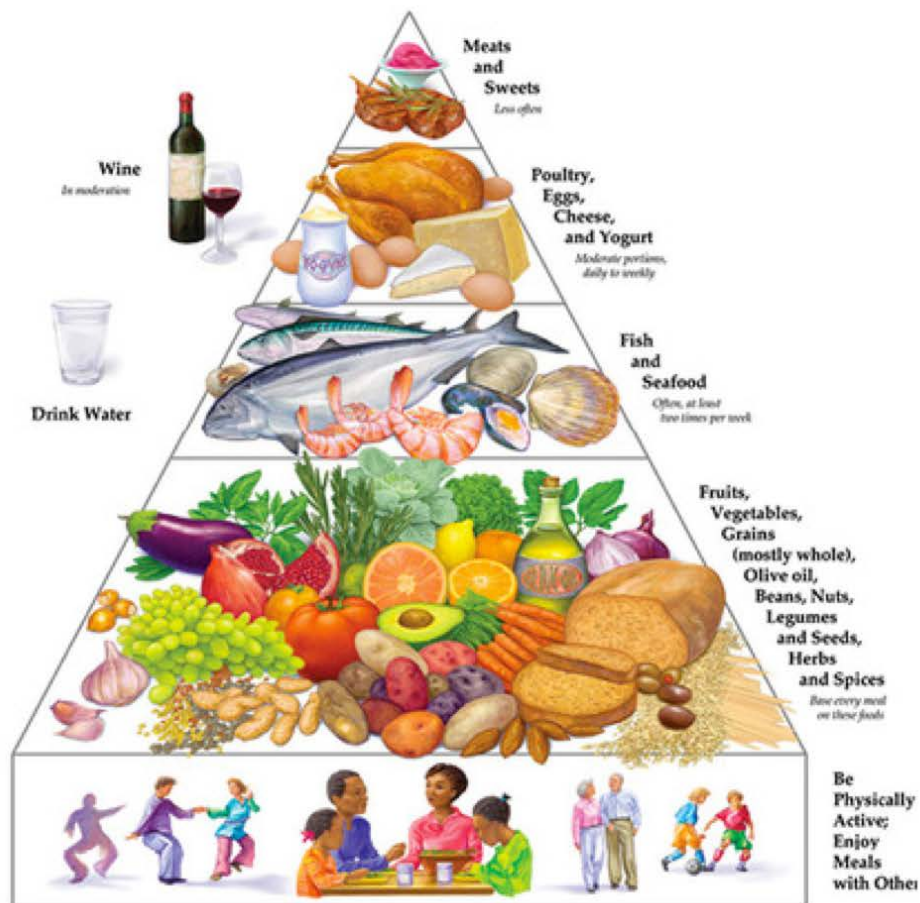


Illustration by George Middleton

© 2009 Oldways Preservation and Exchange Trust

[www.oldwayapt.org](http://www.oldwayapt.org)

# WHY IT'S A RD FAVORITE?

- Focus is on whole foods
- High in fruits and vegetables
  - One serving of fruits and vegetables daily reduces mortality by 5% up to 5 servings daily (25% reduction)<sup>2</sup>
  - Helps maintain healthy blood pressure<sup>3</sup>
- High in whole grains
  - Lowers risk of type 2 diabetes<sup>4</sup>, diverticular disease<sup>5</sup>, heart disease<sup>6,7</sup>, and overall mortality rate<sup>8</sup>
- High in legumes (beans, peas, and lentils)
  - Lowers incidence of type 2 diabetes<sup>9</sup>
- High in heart healthy fats
  - Nuts, seeds, avocado, olive oil, fish
- Low in processed foods, sugary beverages, red meat, and refined grains

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# REFERENCES

- Images

- Image 1: <https://www.andertoons.com/diet/cartoon/0508/just-my-luck-nothing-but-bread-and-water-and-im-on-that-low-carb-diet>
- Image 2: <https://yumkins.wordpress.com/tag/cheddar-cheese-bacon-burger-burgers-hamburger-beef-entree-meal-low-carb-atkins-induction/>
- Image 3: <https://aaptiv.com/magazine/grain-guide>
- Image 4: <https://www.forksoverknives.com/plant-based-primer-beginners-guide-starting-plant-based-diet/#gs.lygrCnc>
- Image 5: <https://www.worldatlas.com/webimage/countrys/europe/westmed.htm>
- Image 6: <http://warszawskibiegacz.pl/weglowodany-tluszcz-lepsze-dla-biegacza/>
- Image 7: <https://oldwayspt.org/traditional-diets/mediterranean-diet>

# The Good the Bad and the Ugly about “Diets”

Carly Davis, MS, RDN, LD

Sydney Rephan, RDN, CSOWM, LD

Connelly Weeks, RDN, LD

May 11, 2018



# Whole Foods Plant Based Diets

## THE VEGAN PLATE



NUTS AND SEEDS

OTHER ESSENTIALS\*

\*Omega 3s  
Vitamin B<sub>12</sub>  
Vitamin D  
Iodine

# Blue Zones Power 9<sup>®</sup>



## Move Naturally

1. Make daily physical activity an unavoidable part of your environment

## Right Outlook

2. Know your purpose
3. Downshift: Work less, slow down, take vacations

## Eat Wisely

4. Eat until 80% full
5. More veggies, less meat & processed food
6. Drink a glass of red wine each day

## Belong

7. Create a healthy social network
8. Connect/reconnect with religion
9. Prioritize family



# FAQs about a Plant-Based Diet



























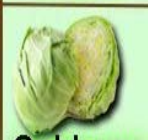



# What about Calcium?

## FOODS HIGH IN CALCIUM

- sesame seeds 351mg
- spinach 245 mg
- collard greens 266 mg
- blackstrap molasses 137 mg
- kelp 136 mg
- tahini 126 mg
- broccoli 124 mg
- swiss chard 102 mg
- kale 94 mg
- brazil nuts 90 mg
- celery 81 mg
- almonds 75 mg
- papaya 73 mg
- flax seeds 52 mg
- oranges 52 mg



SOURCE: THEDETOXMARKET.COM

 Broccoli	 Bok Choy	 Almonds	 Pumpkin Seeds	 Okra	 Collards
 Turnip Greens	 Prickly Pear	 Kohlrabi	 Leeks	 Brazil Nuts	 Artichokes
 Avocado	 Celery	 Green Beans	 Coconut Meat	 Onions	 Gooseberry
 Fennel	 Dandelion Greens	 Swiss Chard	 Spinach	 Kale	 Butternut Squash
 Brussels Sprouts	 Mulberry	 Cabbage	 Sapote	 Sesame Seeds	 Asparagus

RawForBeauty

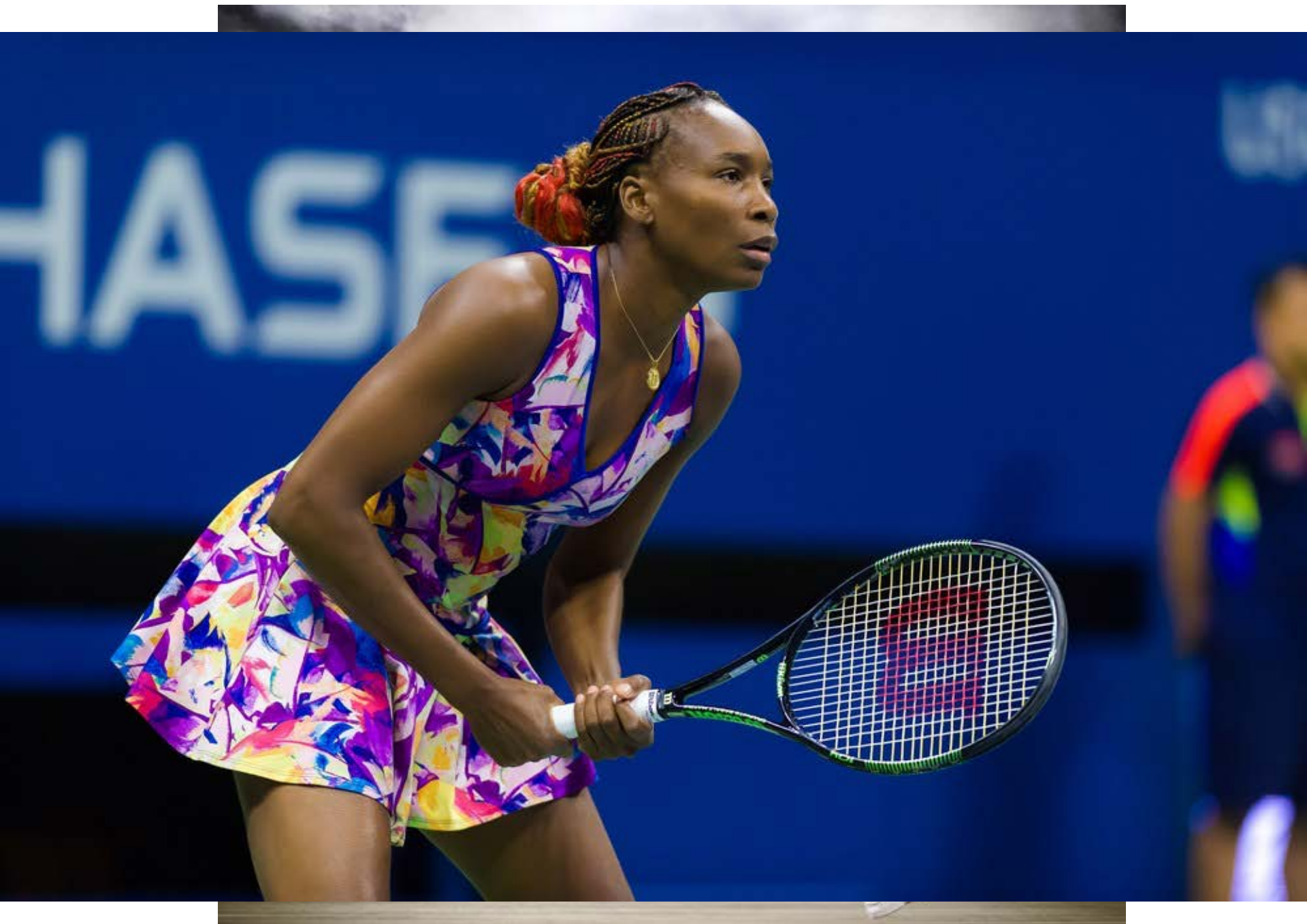
# B-12 and Vitamin D?

The only two nutrients, not produced by plants, that may require supplementation.

Recommended Intake:  
Vitamin D: 2,000 IU/day  
B-12: 250 mcg /day or 2,500 mcg/week







# High Protein Diets

- Atkins
- Paleo
- Ideal Protein

# Dietary Recommendations for Protein

- The average person needs about 0.8 grams of protein per kg per day OR 0.36 g of protein per pound (your weight).
- The body can't absorb more than about 20-30 grams of protein at a time.

# Dietary Recommendations for Protein cont.

- This 5-ounce steak (after cooking) has 35-40 grams of protein.



Photo by Peter Pioppo.

Plant sources of protein contain less fat (except for nuts/seeds) and more fiber.

# GREAT SOURCES OF 8 PLANT-BASED PROTEIN



TEMPEH 30g  
1 CUP

ALMONDS 18g  
3 OZ



LENTILS 18g  
1 CUP

CHICKPEAS 15g  
1 CUP



QUINOA 11g  
1 CUP

PEAS 9g  
1 CUP



OATS 7g  
1 CUP

SPINACH 5g  
1 CUP COOKED

## Did you know... Plants have Protein!?

- To consume a diet that contains enough, but not too much, protein, simply replace animal products with grains, vegetables, legumes (peas, beans, and lentils), and fruits.
- As long as one is eating a variety of plant foods in sufficient quantity to maintain one's weight, the body gets plenty of protein.



# THE GOOD THE BAD AND THE UGLY OF DIETS

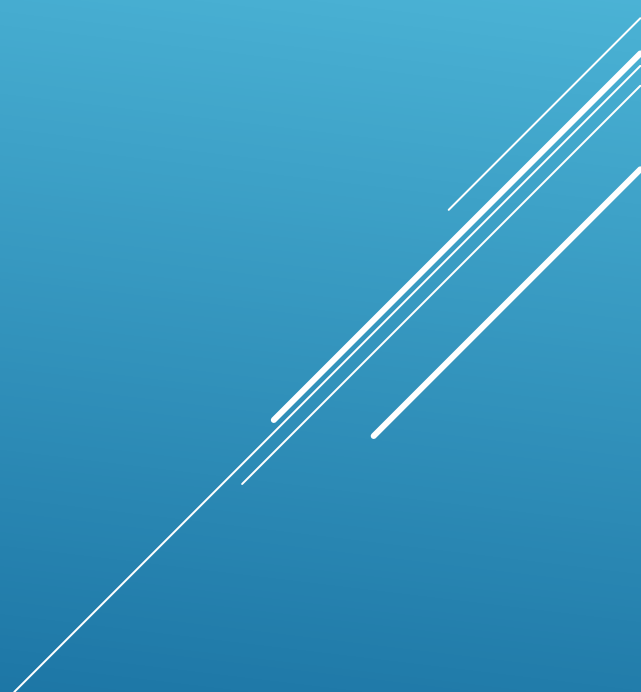
Sydney Rephan, RDN, CSOWM, LD

May 12, 2018

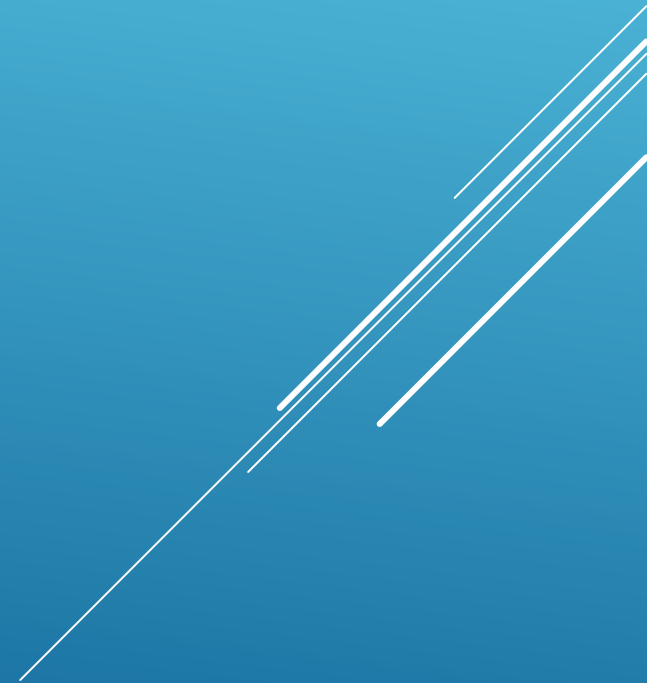
# CAN YOU TELL THE DIFFERENCE?

Not Always

And neither can your patients



MISSION  
IMPOSSIBLE



# WHAT IS A HIGH FAT DIET?

A high fat diet MIGHT be a low carb diet.

A high protein diet MIGHT be a high fat diet.

A low carb diet MIGHT be a high protein diet

It depends on how they are implemented!


# WHAT IS A HIGH FAT DIET?

- ▶ The two main high fat diets are the keto diet and the paleo diet. The Atkins diet is primarily considered a low-carbohydrate diet. Since there are no restrictions on calories, protein or fat (except trans fat), this diet may be a high fat diet.


# THE ATKINS DIET

- ▶ Initially this diet limits carbohydrates to no more than 20 grams/day of net carbohydrates (total carbs – fiber). After 2 weeks, carbs are gradually increased to 120 gms/day.
- ▶ That equals approximately 8 servings/day. The 2015-2020 Dietary Guidelines for Americans recommends 6 “ounce-equivalents” per day of grains (for a 2000 calorie a day diet), 2 cups of fruit, 2.5 cups of vegetables and 3 cups of dairy.

# PALEO


- ▶ Also called the caveman diet, stone age diet or warrior diet, it emphasizes eating plants and animals like the diet of hunter-gatherers 10,000 years ago.
  - ▶ It consists mostly of fish, grass-fed pasture raised meat, vegetables, fruit, fungi, roots and nuts. It excludes grains, legumes, dairy foods, salt, refined sugar and processed oils.
- 

# THE KETOGENIC DIET


- ▶ This diet was used by doctors to treat epilepsy in children in the 1920's. It may result in vitamin and mineral deficiencies, bone loss and gastrointestinal disturbances, according to Mayo Clinic. And it may increase risk of chronic diseases.
  - ▶ Some studies have found that it improves insulin sensitivity, reversing type 2 diabetes and promoting weight loss
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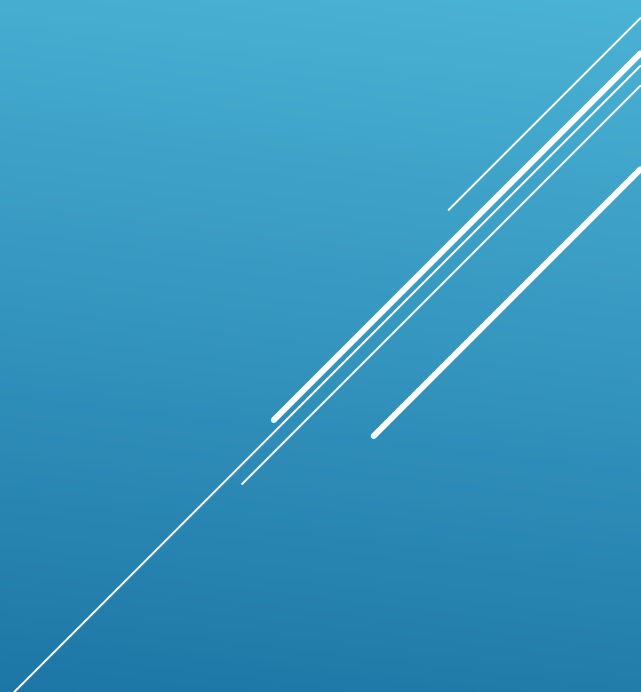
# KETO

- ▶ Unlike other low-carb diets that are moderate in fat content, this diet typically is 70-80% fat with a moderate amount of protein.
  - ▶ There is not a standard keto diet with specific ratios of proteins, carbs and fat but typically carb intake is less than 50 gms/d and can be as low as 20. In general, though, 5 – 10% of calories will come from carbs and 10-20% from protein. Eating too much protein can prevent ketosis so a keto diet specifies enough protein to preserve muscle but still lead to ketosis.
- 
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# HOW THE KETO DIET WORKS

- ▶ If the body is deprived of glucose (the body's main energy source obtained from eating carbs), an alternative fuel (ketones) is produced from stored fat.
  - ▶ The brain needs a steady supply of glucose, which it can't store. If little carbohydrate is eaten, stored glucose is pulled from the liver and temporarily breaks down muscle to release glucose.
  - ▶ After 3-4 days, stored glucose is depleted, blood levels of insulin decrease and the body uses fat as its primary fuel.
- 
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# THE LIVER PRODUCES KETONE BODIES FROM FAT

- ▶ Ketosis occurs when they accumulate in the blood. We all experience this, for instance during sleep or very strenuous exercise.
  - ▶ Proponents of the keto diet say that if followed carefully, blood levels of ketones should not reach a harmful level. However, how soon this state is reached and the number of ketone bodies that accumulate is variable, depending on body fat percent and resting metabolic rate.
- 
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# WHAT ARE THE PROS?

- ▶ The Atkins diet offers dieters high satiety and provides structure.
  - ▶ The Paleo diet is “low in sodium and may be more appealing to men,” according to Popular Diets.
  - ▶ The Keto diet encourages eliminating refined, processed carbs.
- 

# WHAT SIDE EFFECTS – OR “CONS” MIGHT THEY HAVE

- ▶ Atkins: “is restrictive, difficult to sustain, doesn’t adhere to national dietary guidelines and may increase risk of cardiovascular disease.”
  - ▶ Paleo can be expensive, grains and dairy are excluded so there’s a risk for nutrient deficiencies.
  - ▶ Following a diet such as paleo that reduces carbohydrates has been linked to increased risk of death in a study in the Journal of American Heart Association.
- 

# KETO SIDE EFFECTS

- ▶ The keto diet can cause nausea, headache, mental and physical fatigue (& bad breath).
- ▶ for instance, it advocates avoiding carrots since carrots are high on the glycemic index. A recent Consumer Reports article points out that the fiber in [1.5 cups cooked]carrots provide about 25 percent of daily fiber needs [for a woman 50 or under]. Fiber is a boon to your digestive health and slows the release of sugar into your system . One cup of carrots contain five times the amount of vitamin A needed per day. Carrots supply carotenoids - powerful antioxidants that boost immune function and may reduce our risk of some cancers.

# KETOACIDOSIS

- ▶ Excess ketone bodies can produce a toxic level of acid in the blood. During this state, kidneys start excreting ketone bodies along with body water in urine, causing fluid-related weight loss. This happens mostly in people with type I diabetes because they don't produce insulin, which prevents overproduction of ketones. But it has been reported in rare cases in nondiabetics following a prolonged very low carb diet.

# HIGH FAT MEAT INTAKE SIDE EFFECTS

According to the Physician's Committee for Responsible Medicine

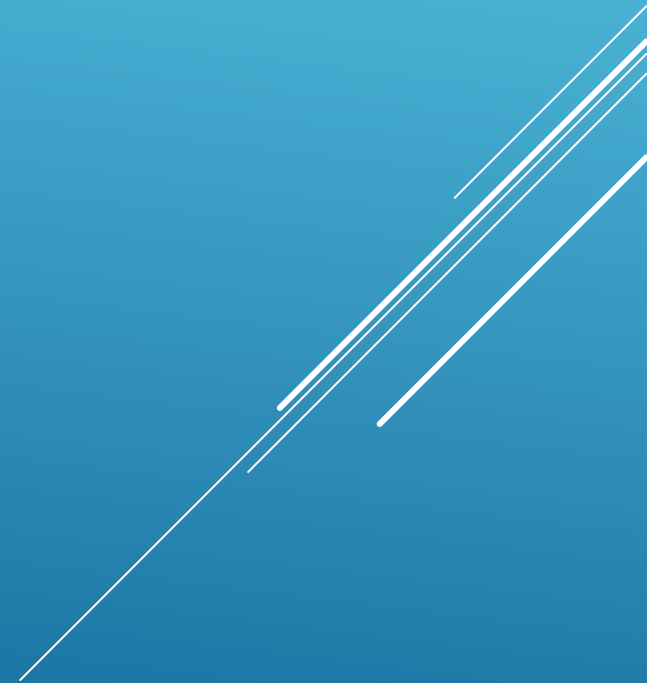
"There is clear evidence that links meat consumption to health risks...such as diabetes, heart disease and cancer."

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# HIGH FAT/SATURATED FAT SIDE EFFECTS

A 2002 article in Diabetes Care found that, "consumption of a high-fat diet and high intakes of saturated fat is associated with an increased risk of type 2 diabetes."



# IF THAT'S THE ANSWER, WHAT'S THE QUESTION?


- ▶ An article in the Lancet from August 2017 showed that high fat diets were associated with lower 7-year mortality rates – it's worth noting, however, that there was an inverse relationship between saturated fat intake and stroke.
- 

# IF THAT'S THE ANSWER, WHAT'S THE QUESTION?


Studies tend to focus on ONE HEALTH CONCERN AT A TIME. So while the Lancet article offers promising results FOR CARDIOVASCULAR EVENTS AND MORTALITY, there may be a downside with other chronic diseases.

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# WEIGHT LOSS OR MACRONUTRIENT?

- ▶ A report from the American Heart Association, the American College of Cardiology and the Obesity Society concluded that there isn't enough evidence to say whether most low carb diets provide heart healthy benefits.
  - ▶ Though low carb diets may help prevent or improve serious health conditions such as metabolic syndrome, diabetes, high blood pressure and cardiovascular disease, almost any diet that helps you lose weight offers those benefits.
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# AND MOST IMPORTANTLY...HOW EFFECTIVE ARE THEY?

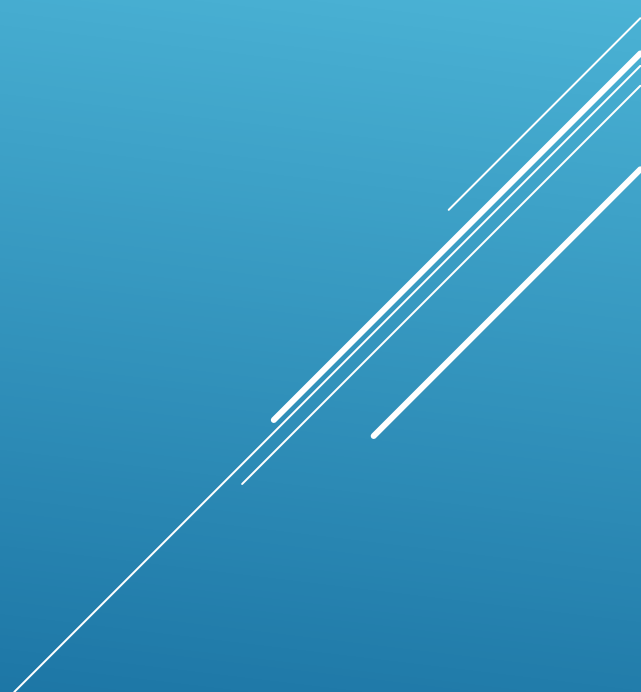
- ▶ How likely is someone to stick to it? According to the Harvard T. H. Chan School of Public Health, most studies (of the keto diet) so far had few participants, were for 12 weeks or less and didn't have control groups.
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# HOW EFFECTIVE ARE THEY?

- ▶ Popular Diets concludes that “Reduced-calorie diets result in clinically meaningful weight loss *regardless of which macronutrients they emphasize.*”
- 
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# IN A NEJM 2009 ARTICLE BY SACKS, ET AL


- ▶ “Several trials showed that low-carbohydrate, high-protein diets resulted in more weight loss over the course of 3 to 6 months than conventional high-carbohydrate, low-fat diets,
  - ▶ but other studies did not show this effect.
  - ▶ A smaller group of studies that extended the follow-up to 1 year did not show that low-carbohydrate, high-protein diets were superior to high-carbohydrate, low-fat diets.”
- 
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# HOW EFFECTIVE ARE THEY?


From Sacks, et al, NEJM: "Among the few studies that extended beyond 1 year, one showed that a very-low-fat vegetarian diet was superior to a conventional low-fat diet, one showed that a low-fat diet was superior to a moderate-fat diet, two showed that a moderate-fat, Mediterranean-style diet was superior to a low-fat diet, one showed that a low-carbohydrate diet was superior to a low-fat diet, and another showed no difference between high-protein and low-protein diets. Small samples, underrepresentation of men, limited generalizability, a lack of blinded ascertainment of the outcome, a lack of data on adherence to assigned diets, and a large loss to follow-up limit the interpretation of many weight-loss trials."



# HOW EFFECTIVE ARE THEY?

- ▶ According to [uptodate.com](http://uptodate.com), “Many types of diets produce modest weight loss, including
    - ▶ balanced low-calorie
    - ▶ low-fat/low-calorie
    - ▶ moderate-fat/low-calorie and
    - ▶ low-carbohydrate dietsas well as the Mediterranean diet.”
- 

# OPTIMAL DIET

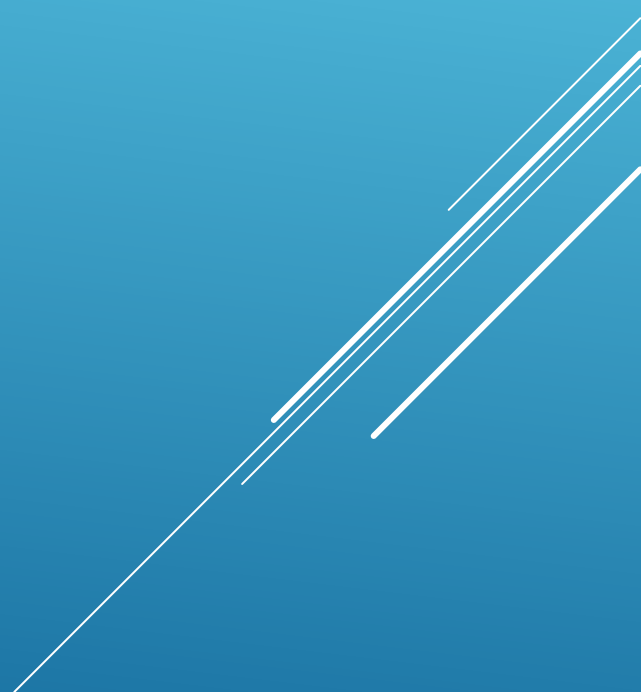
- ▶ In societies with a diet high in plant foods and low in animal products, there is a low rate of heart disease, stroke, diabetes, obesity, hypertension, some cancers and osteoporosis.
  - ▶ The optimal diet provides whole grains, legumes, fruits and vegetables.
  - ▶ One such healthy diet is the DASH diet – DIETARY APPROACHES TO STOP HYPERTENSION
- 
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# DASH

- ▶ Developed in the 1990's in collaboration with NIH, The DASH diet encourages reducing the sodium in your diet and eating a variety of foods rich in nutrients that help lower blood pressure, such as potassium, calcium and magnesium.
- ▶ According to Mayo Clinic, "By following the DASH diet, you may be able to reduce your blood pressure by a few points in just two weeks.
- ▶ Over time, your systolic blood pressure could drop by eight to 14 points, which can make a significant difference in your health risks."
- ▶


# DASH

Because the DASH diet is a healthy way of eating, it offers health benefits besides just lowering blood pressure. The DASH diet is also in line with dietary recommendations to prevent osteoporosis, cancer, heart disease, stroke and diabetes.






# DASH - TWO SODIUM LEVELS

- ▶ **Standard DASH diet.** You can consume up to 2,300 milligrams (mg) of sodium a day.
  - ▶ **Lower sodium DASH diet.** You can consume up to 1,500 mg of sodium a day.
  - ▶ Both versions of the DASH diet aim to reduce the amount of sodium in your diet compared with what you might get in a typical American diet, which can amount to a whopping 3,400 mg of sodium a day or more.
- 


# DASH

- ▶ FYI, a teaspoon of salt has
  - ▶ 2,325 mg of sodium.


# DASH

- ▶ Both versions of the DASH diet include lots of whole grains, fruits, vegetables and low-fat dairy products. The DASH diet also includes some fish, poultry and legumes, and encourages a small amount of nuts and seeds a few times a week
  - ▶ You can eat red meat, sweets and fats in small amounts. The DASH diet is low in saturated fat, cholesterol and total fat.
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# DASH

- ▶ While the DASH diet is not a weight-loss program, you may indeed lose unwanted pounds because it can help guide you toward healthier food choices.
  - ▶ And it's flexible. It doesn't require special foods or limit certain food groups.
- 
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# THE MAIN MESSAGE

- ▶ Choose a plan that you can stick with forever vs a temporary fix
  - ▶ Choose a plan that allows you to include foods you enjoy (no FORBIDDEN FOODS)
  - ▶ Choose a plan that offers a variety of healthy foods!
- 
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