The Mediterranean Diet: An update

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THE MEDITERRANEAN DIET

Wine
In moderation

Meats & Sweets
Limit

Water
At least 8 cups a day

Poultry, Eggs & Dairy
Moderate portions daily to weekly

Fish & Seafood
Often, at least twice a week

Vegetables, Fruits, Whole Grains, Olive Oil, Beans, Nuts, Legumes, Seeds, Herbs & Spices
Base all meals on these foods

Savor meals with loved ones and be active every day.
North Carolina Research Campus

Mediterranean Food Pyramid

Meats and Sweets
Less often

Wine
In moderation

Poultry, Eggs, Cheese, and Yogurt
Moderate portions daily to weekly

Drink Water

Fish and Seafood
Often, at least twice a week

Fruits, Vegetables, and Grains (mostly uncooked)

Olive Oil, Beans, Nuts, Legumes and Seeds, Herbs and Spices
Base every meal on these foods

Daily Physical Activity

©2013 Mediterranean Diet

No physically active episodic meals with others
U.S. News and World Report Rankings 2018

- Tied for #1 Best Diets overall
- #14 in Best Weight Loss Diets
- #1 in Best Diabetes Diets
- #1 tie in Best Diets for Healthy Eating
- #2 tie in Best Heart-Healthy Diets
- #1 in Best Plant Based Diets
- #1 in Easiest Diets to Follow
Health Benefits

- Preserved brain volume with age
- Reduced risk of Alzheimer's disease
- Reduced risk of heart disease
- Reduced risk of Type 2 diabetes
- Reduced incidence of cancer


Landmark study that studied diet & lifestyle with risk factors for cardiovascular disease across countries & cultures

- Showed that cholesterol levels, blood pressure, diabetes, and smoking are risk factors for coronary heart disease

- Ancel Keys and Flaminio Fidanza
  - 39% decreased coronary mortality risk
  - 29% lower cardiovascular mortality risk
Saturated Fat

- Recommendations for reduced red meat consumption by many organizations
- DASH diet:
  - less than 2 “servings” or less per day of lean red meat
- American Heart Association:
  - recommends less than 10% of calories from saturated fat (chicken, fish, beans are better)
Annual U.S. meat consumption, pounds per capita

Note: The USDA uses meat available in our food supply, minus estimated loss at the retail and consumer levels, as a proxy for consumption.

Source: U.S. Department of Agriculture
Primary Prevention of Cardiovascular Disease with a Mediterranean Diet (PREDIMED)

- Multicenter trial in Spain in 2013
- Randomized trial for primary prevention of cardiovascular events

- Patients (ages 55 - 80 years of age) with high cardiovascular risk with no cardiovascular disease, assigned to one of 3 groups
  - A Mediterranean diet supplemented with extra-virgin olive oil
  - A Mediterranean diet supplemented with mixed nuts
  - Control diet emphasis on eating a low fat diet

Mediterranean Diet

- Olive Oil ≥ 4 tbsp/day
- OR
- Tree nuts and peanuts ≥ 3 servings/week
- Fresh fruits ≥ 3 servings/day
- Vegetables ≥ 2 servings/day
- Fish (especially fatty fish), seafood ≥ 3 servings/week
- Legumes ≥ 3 servings/week
- Sofrito ≥ 2 servings/week
- White meat Instead of Red meat
- Wine with meals (optional) ≥ 7 glasses/week
Low-fat diet (control)

- Low fat dairy products ≥3 servings/day
- Bread, potatoes, pasta, rice ≥3 servings/day
- Fresh Fruits ≥3 servings/day
- Vegetables ≥2 servings/day
- Lean fish and seafood ≥3 servings/week

Discouraged
- Vegetable oils (including olive oil) ≤2 tbsp/day
- Commercial baked goods ≤1 serving/week
- Nuts/fried snacks ≤1 serving/week
- Red & processed meats/fatty fish ≤1 serving/week
- Spread fats ≤1 serving/week
- Sofrito ≤2 servings/week
288 primary-outcome events occurred over 4.8 years
96 in the Mediterranean diet with extra virgin olive oil (3.8%)
83 in the Mediterranean diet with nuts (3.4%)
109 in the control group (4.4%)
Conclusions

- Mediterranean diet that emphasis EVOO or nuts, reduced the risk of major cardiovascular events by 30%

- “The results support the benefits of the Mediterranean diet for the primary prevention of cardiovascular disease”
US Dietary Guidelines: Key Recommendations

- Consume a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level.
  - A variety of vegetables from all of the subgroups
  - Fruits, especially whole fruits
  - Grains, at least half of which are whole grains
  - Fat-free/low-fat dairy foods
  - A variety of protein foods
  - Oils
Mediterranean style pattern includes more fruits, seafood and less dairy
But...

- Uncertainty with inconsistencies!
- Past study participants ate maybe 25-42oz/week of red meat
- Historic Greek olive farms (9 oz/week) based upon food consumption patterns in 1960’s data
- AND...
- New studies showing no negative effect on cardiovascular risk factors with lean red meat consumption
2017 study by O'Connor and Campbell in American Journal of Clinical Nutrition

**What impact does ≥0.5 or <0.5 servings of total red meat per day have on cardiovascular risk factors?**

- **Meta-analysis**
  - (945 studies with 24 qualified RCTs)
- Intake of red meat did not impact lipid levels or blood pressure levels over time
- **Concluded:** Eating ≥0.5 servings of total red meat per day does not impact lipids or blood pressure

New study!
American Journal of Clinical Nutrition - 2018

- Looked at the effects of eating different amounts of lean, unprocessed red meat in a Mediterranean Pattern on cardiometabolic disease
- Believed red meat consumption does not influence improvements when included in a Mediterranean style of eating

- O’Connor LE, Douglas PJ, Wright AJ, Campbell WW Am J Clin Nutr 2018;108:1-8. A Mediterranean-style eating pattern with lean, unprocessed red meat has cardiometabolic benefits for adults who are overweight or obese in a randomized, crossover, controlled feeding trial
Investigator-blinded, randomized, crossover, controlled feeding trial

41 individuals

46 years old

30.5 BMI

Macronutrient targets:

40% carbs, 22% protein, 40% fat

7% saturated fat and 20% monounsaturated
Mediterranean Pattern for two, 5 week interventions separated by 4 weeks of self-selected eating (unrestricted/washout)

- All foods prepared and provided to participants
- Red meat and poultry lean (less than 10g fat)
- Weekly weigh-ins (encouragement for compliance)

*Med-Red (or Med-Control) intervention diet for 5 weeks*

*4 week self-selected diet*

*Med-Control (or Med-Red) intervention diet for 5 weeks*
## Eating Patterns

<table>
<thead>
<tr>
<th>Food Group Servings</th>
<th>Med-Red</th>
<th>Med-Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits per day</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Vegetables per day</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Grains per day (Whole grains and refined)</td>
<td>4 (4 + 0)</td>
<td>5 (4 + 1)</td>
</tr>
<tr>
<td>Protein rich foods per week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Red meat (oz)</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>- Poultry (oz)</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>- Seafood (oz)</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>- Eggs</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>- Nuts, seed, soy (oz)</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>Dairy per day</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Olive oil per week (tsp)</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>
From: A Mediterranean-style eating pattern with lean, unprocessed red meat has cardiometabolic benefits for adults who are overweight or obese in a randomized, crossover, controlled feeding trial


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FIGURE 2  Changes in systolic blood pressures from consuming a Med-Red or Med-Control diet for 5 wk. Results are presented as LS means ± SEMs (n = 41). Data were analyzed using a doubly repeated-measures ANOVA adjusted for age, sex, and body mass at each time point. *Change over time. ¹Waking blood pressure: 0800–2100. ²Sleeping blood pressure: 2230–0730. Diastolic blood pressure results followed similar patterns and are available in Supplemental Tables 1 and 2. LS, least squares; Med-Control, Mediterranean-style eating pattern with ~200 g lean, unprocessed red meat/wk; Med-Red, Mediterranean-style eating pattern with ~500 g lean, unprocessed red meat/wk.
Conclusions:

- Mediterranean-style eating pattern that includes lean and unprocessed red meat (18 oz/week) can have a cardiometabolic benefit for adults who are overweight/obese.
Let’s Compare...

- **Ground Beef, raw**
  - 4 ounces
  - 93% Lean/7% fat
  - Calories: 170
  - Total Fat: 8 grams
  - Saturated fat: 3.5g
  - Cholesterol: 70 mg
  - Sodium: 75 mg
  - Protein: 23g
  - Iron: 2.63mg

- **Ground Turkey, raw**
  - 4 ounces
  - 93% Lean/7% Fat
  - Calories: 170
  - Total Fat: 8 grams
  - Saturated fat: 2.5g
  - Cholesterol: 80 mg
  - Sodium: 80 mg
  - Protein: 21 g
  - Iron: 1.32 mg
Let’s look at chicken...

- Popeye’s Chicken Tenders Meal
- 3 pieces of chicken tenders (445 kcal, 9g sat fat)
- Regular Fries (286 kcal, 5g sat fat)
- Biscuit (207 kcal, 6g sat fat)

- TOTAL FOR MEAL: 938 calories & 20g saturated fat
  - A day’s worth of recommended saturated fat

- Better choice: Popeye’s “blackened” chicken tender option = 0 GRAMS saturated fat
Next Steps - The Mediterranean Diet

- Encourage patients to be active daily!

- Anchor plates with extra vegetables and fruits

- Choose whole grains vs processed white grains

- Emphasize healthy portions of monounsaturated oils (olive oil, nuts and seeds, and omega-3 fats from fish)
Next Steps - The Mediterranean Diet

- Limit processed meats that are high in fat (red & white meats)
- It’s ok to encourage unprocessed, lean meats
  - Lean meats are: contains less than 10g of total fat, 4.5g or less of saturated fat, and less than 95 mg of cholesterol
  - Unprocessed meats are: preserved by refrigeration or freezing only with no smoking, curing, salting or addition of chemical preservatives
Questions/Comments