

## Nutrition, Aging & Chronic Disease



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- Over 20 years experience as a group fitness instructor & personal trainer.
- Currently integrates kickboxing, aquatics, interval training, weight management & senior fitness.
- Nationally & internationally fitness presenter.
- Formerly the Professional Development Administrator for the American Council on Exercise (ACE).



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## Nutrition 101



- Nutrition: The science of food and the nutrients in it as they relate to health
- The digestion, metabolism, transport, and uses of those foods
- Good nutrition helps to reduce morbidity (illness) and mortality (death) from diseases

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## Did You Know –

Poor nutrition increases the risk for these diseases?

- Dyslipidemia
- Cardio disease
- Hypertension
- Diabetes
- Alzheimer’s
- Osteoporosis
- Stroke
- Cancer



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## Hot Topics In Healthy & Nutrition

1. The effect of organic or “natural” foods on health & longevity
2. Understanding the role of diet, hydration & supplementation on cognition
3. Statin drugs vs. lifestyle change for high cholesterol
4. The effect of the “DASH Diet” on blood pressure
5. The role of calcium, Vitamin D & soy products on osteoporosis
6. The Mayo Clinic’s “Diabetes Diet”

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## 1) Organic America

- 25% of Americans buy Organic products at least once a week
- Organic food sales hit \$22.75 billion world-wide in 2007
  - 45% American consumers
- 17-21% increase in annual sales since 1997



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## What is “Organic”?



- Every ingredient grown organically except salt and water
- No irradiation
- No GEOs (genetically engineered organisms)
- Not grown with sewage sludge fertilizer

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## Do Organic Foods Guarantee Better Nutrition?



- Organically grown tomatoes have more vitamin C
- Organically grown bell peppers have same vitamin C as conventional
- Research virtually unavailable: USDA stopped studying organic nutrition years ago at request of corporate agricultural interests

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## “Natural Foods”



- No legal definition: All food comes from natural sources
- “Natural” is more a marketing term than a scientific one
- It does NOT mean:
  - Organic
  - No processing
  - No additives
  - It’s good for you

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## WHAT IT SHOULD MEAN

*In UK “natural” means no interference by man*

- No chemicals or additives
  - Sodium, MSG,
- Not severely processed
  - Beyond freezing, heating or concentrated



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## FUNCTIONAL FOODS



- One of the fastest growing segments of the food industry
- Foods that have something added other natural nutrients
- Almost non-existent in 1992, there were 200 new products in 2007

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## Good Food or Bad Science?

- 95 % of the claims have not been approved
- People believe the marketing
- Could potentially interact with other supplements
- There is no research indicating that the supplemental additives act the same as naturally occurring nutrients




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## Probiotics

- Probiotics are organisms such as bacteria or yeast that are believed to improve health.
- They are available as supplements and in foods
- Generally considered safe but used excessively may cause complications and exacerbate some diseases
- "Activia" Yogurt the best known brand name



"Are you a good bacteria or a bad bacteria?"

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## 2) Nutrition & Brain Function

### Life Expectancy at Birth, 2012

White Male	White Female	Hispanic Male	Hispanic Female	Black Male	Black Female
78.2	83.4	75.8	80.6	69.6	76.5

### Remaining Life Expectancy at Age 65, 2012

White Male	White Female	Hispanic Male	Hispanic Female	Black Male	Black Female
19.2	22.2	18.2	21.9	17.2	19.8

Source: CDC, 2012

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### Leading causes of nursing home admission:

1. Neurological
  - Dementia
2. Cardiovascular
  - Congestive heart failure
3. Musculoskeletal
  - Osteoporosis
  - Osteoarthritis



According to the *Wall Street Journal*, the medical costs of treating dementia exceed the costs of heart disease & cancer combined.

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### Using Nutrition to Improve Cognition



- Start with medical / dietetic consult
- Nutritious diet
- Control blood pressure, cholesterol
  - Hypertension & hyperlipidemia increase the risk of stroke, which directly affects cognition

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### Nutrition & Brain Function

- Stay well hydrated
  - Dehydration mimics the symptoms of dementia
- Avoid high sodium foods
  - Salty foods tend to cause dehydration which affects cognition
- Ask doctor about supplementing with:
  - B-12 & Folate
    - Both are associated with cognitive decline
  - Lactulose
    - This laxative also removes ammonia, a neurotoxin, from the system

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### 3) Understanding Dyslipidemia: Cholesterol Definitions

- HDL: High Density Lipoprotein
- LDL: Low Density Lipoprotein
- VLDL: Very Low Density Lipoprotein




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### What is Dyslipidemia?

- Hyperlipidemia
  - Elevated triglyceride & cholesterol
- Hypertriglyceridemia
  - Elevated triglycerides only
- Hypercholesterolemia
  - Elevated cholesterol only




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### Hyperlipidemia: Causes & Treatment

Indicator	Causes	Treatment
•Low HDL	•Genetics	•Drug therapy
•High LDL	•Abdominal obesity	•Weight loss
•High TGs	•Inactivity	•Increased activity
	•Diet	•TLC Diet
	•Smoking	•Increased fiber intake
	•Steroid use	•Stop smoking
	•Insulin Resistance	

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## National Cholesterol Education Program (NCEP) Standards



- Total CHOL: Under 200
- HDL: Over 40
  - *Over 60 preferred*
- LDL: Under 130
  - *Under 100 preferred*
- VDL: Under 30
- TG: Under 150

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## Controlling Cholesterol: Understanding Statin Drugs:

- Lipitor, Crestor, Luxor
- Reduces the amount of LDL (bad) cholesterol made by liver
- Reduces triglyceride level in blood
- Increases HDL (good) cholesterol



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## Statins: Possible Side Effects

- May cause muscle weakness, tenderness or pain, especially with exertion
- May affect liver function:
  - Yellowish skin/eyes
  - Abdominal pain, nausea
- May result in kidney failure: rhabdomyolysis
  - Dark brown urine
- May increase risk for Type II Diabetes



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## Controlling Cholesterol: Dietary Changes

- Oatmeal
- The “TLC” Diet
- The Portfolio Diet



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## Does Oatmeal Help?

- Overwhelming evidence that oatmeal lowers cholesterol
- Soluble (“sticky”) fiber sticks to dietary cholesterol and prevents it from being absorbed
- In 1997 FDA allowed advertisers to promote oatmeal’s health claims
- 2005 study in “Journal of Clinical Nutrition” found that a diet high in oats and oat bran lowered cholesterol as much as cholesterol lowering drugs

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## Getting Oatmeal into the Diet

- Aim for 5 – 10 grams of oatmeal (soluble fiber) per day
- Enjoy oatmeal or oat bran cereal for breakfast (1.5 cups of oatmeal = 3 grams soluble fiber)
- Add ground oatmeal to casseroles or soups, also mix with breadcrumbs
- ADA: For baking, replace 1/3 of the flour with oatmeal (quick or old fashioned)



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### Therapeutic Lifestyle Change Diet (TLC)

Sat fat	< 7% of
Poly fat	Up to 10%
Mono fat	Up to 20%
Total fat	25%-35%
Carb	50% 60% (primarily complex)
Fiber	20-30 grams/day
Protein	15% (1 oz animal protein = 25 mg CH)
Cholesterol	< 200 mg/day
Total Kcals	Balance intake & expenditure to maintain desirable body weight

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### The Portfolio Diet

- Some studies have shown this diet to lower cholesterol as much as some statin drug therapies
- The diet focuses on daily inclusion of 4 specific types of foods:
  - Tofu instead of meat
  - Sticky fiber on a daily basis: oats, barley, eggplant, okra, Metamucil (3 times per day)
  - Plant-sterol enriched margarine (“Benecol”) in lieu of butter or margarine
  - Almonds and other tree-nuts

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### 4) Diet & Hypertension

- “The Silent Killer”
- Affects over 50% of those over age 65
- Affects more men prior to age 50; more women after age 50
- Affects 3 main organs
  - ✓ Brain-strokes
  - ✓ Kidneys-renal failure
  - ✓ Heart-congestive heart failure




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## Hypertension Definitions

Source: JNC 7: May, 2003

Category	Systolic	Diastolic
Optimal	<120	<80
Pre-hypertension	≥120	≥80
Isolated Systolic Hypertension	≥160	<90
<b>Hypertension</b>		
Stage 1	140-159	90-99
Stage 2	≥160	≥100

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## Reversing “Pre-hypertension”

- 1) Make dietary changes
- 2) Daily physical activity
- 3) Daily stress management



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## Lifestyle Modifications



- Increase physical activity and/or exercise
- Reduce body fat
- Reduce dietary intake of saturated fat & cholesterol
- Eat more fiber
- Stop smoking
- Monitor alcohol intake

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## Sodium & High Blood Pressure

- Traditional:
  - Limiting sodium intake lowers blood pressure
- 2013:
  - “There is no rationale that lowering sodium lowers blood pressure.”
  - Institute of Medicine, for the Centers for Disease Control and Prevention
- And furthermore....
  - Limiting sodium increases triglyceride levels
  - Insulin resistance increases
  - Sympathetic nervous system activity increases
  - Each of these factors can increase the risk of heart disease, including CHF

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## Nutrition Misconception #1

- “Sea salt is better than table salt”
  - 61% of CAD patients surveyed by AHA believed this
  - Fact: Salt is salt, and sodium is sodium, be it sea salt, kosher salt or Morton’s



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## Nutrition Misconception #2 “Alcohol is Good for the Heart”

- Drinking too much alcohol can:
  - Raise triglyceride level
  - Increase blood pressure
  - Contribute to obesity
  - Increase the risk of diabetes
  - Increase fall risk for seniors
  - Increase stroke risk
- Moderation, defined:
  - an average of 1 – 2 drinks/ day for men and one drink/ day for women:
    - One 12 oz. beer
    - One 4 oz. glass of wine,
    - 1 cocktail: 1.5 oz. pour
- The American Heart Association cautions people NOT to start drinking if they do not already drink alcohol.

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## The DASH Diet

### “Dietary Approaches to Stop Hypertension”

- Promoted by National Heart, Lung & Blood Institute
  - (An agency of the US Dept of Health & Human Services)
- Endorsed by the US Department of Agriculture:
  - “An ideal eating plan for all Americans”
- Has been shown to lower blood pressure *without* having to lose weight
- Now also used to combat diabetes & pre-diabetes
- Focuses on fruits & vegetables, low fat dairy, lots of fiber, minimal sweets & sugary drinks
- Considered to be highly sustainable for long duration lifestyle change.

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## DASH Diet Daily Composition

- Fat: 27%
  - Saturated: 6%
- Protein: 18%
- Carb: 55%
- Cholesterol: 150 mg
- Potassium: 4700 mg
- Sodium: 2300
- Calcium: 1250
- Magnesium: 500
- Fiber: 30 grams



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## 5) Nutrition & Osteoporosis:

- After age 35 virtually all American women have some loss of bone mass
- After age 60 most American women have lost enough bone mass to make fracture imminent
- Nutrition plays a major role in bone health



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## Understanding Osteopenia & Osteoporosis

- Osteopenia
  - BMD deviation of >1 below young normal values
  - No exercise restrictions
- Osteoporosis
  - BMD deviation of >2.5 below young normal values
  - Major exercise restrictions



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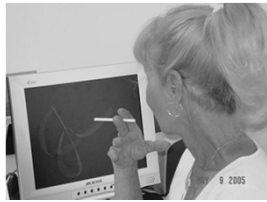
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## Modifiable Risk Factors

- Smoking
- Alcohol abuse
- Excessive caffeine consumption
- Excessive dietary protein consumption
- Lack of dietary calcium
- Lack of sunlight exposure (to generate vitamin D)



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## What are Biphosphonates? What Do They Do?



- Fosomax, Actonel, Boniva, Reclast
- Increases bone density at spine and hips.
- Possible side effects:
  - Heart burn, upset stomach, esophageal regurgitation
  - Necrosis of the jaw
  - Increased risk of fracture to femoral shaft

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## Nutrition & Osteoporosis

- What We Know (Today)
  - Watch sodium intake
  - Limit intake of soda pop & caffeine
  - Get your protein
- The Controversies:
  - Get sufficient calcium & Vitamin D (but not too much)
  - And what about soy products?



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## BREAKING NEWS:

### RE: Calcium & Vit D Supplementation

- June, 2012
- National Preventative Services Task Force:
  - “Healthy post-menopausal women should NOT supplement with Vitamin D or Calcium”
  - Benefit of such supplementation has not been established
  - Recommendation based on analysis of 137 separate randomly controlled studies

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## What About Soy?

- Soy products:
  - edamame, tofu, tempeh, and soy beverages
- Rich in protein but may hamper calcium absorption
- Research is mixed
  - May increase bone density
  - May increase risk of breast disease, heart disease



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## 6) Understanding Diabetes Mellitus

- Pancreas produces insulin, a hormone
- Insulin moves sugar (glucose) from the bloodstream to the cells
- Cells use glucose for nutrition
- For diabetics either the pancreas does not produce insulin (Type I)
- Or the cells cannot utilize the insulin (Type II)
  - Also called insulin resistance, associated with obesity
- The diabetic's goal is to keep blood glucose & insulin levels balanced
  - Hypoglycemia: Blood sugar too low
  - Hyperglycemia: Blood sugar too high

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## Role of Nutrition in Diabetes Care

- For both Type 1 and 2, exercise helps to:
  - Reduce the risk of complications and co-morbidities
  - Improve quality of life



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## Symptoms of Hypoglycemia

Causes: too much insulin, too much exercise, too little food

- Defined as blood sugar levels <60 mg/dl
  - Dizziness
  - Light headedness
  - Unsteady
  - Confused irritable
  - Nervous
  - Unconscious



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## Symptoms of Hyperglycemia

Causes: too little insulin, too little exercise, too much food

- Blood sugar levels >200 mg/dl
- Blurred vision
- Headaches
- Fruity-smelling breath
- Nausea and vomiting
- Shortness of breath
- Abdominal pain
- Weakness & Confusion
- Coma



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## The Mayo Clinic's "Diabetes Diet"

MNT (medical nutrition therapy) for diabetes

- **Foods to Consume**
  - Healthy carbs
  - Fiber rich foods
  - Heart Healthy fish
  - Good fats
- **Foods to Avoid**
  - Saturated fats
  - Trans fats
  - High cholesterol foods
  - High sodium foods
- **A Typical Day's Menu: 1200 – 1600 kcals**
- **Breakfast:** Whole-wheat waffle, one piece of fruit, 6 ounces of nonfat vanilla yogurt.
- **Lunch:** Cheese and veggie pita, medium apple.
- **Dinner:** Beef stroganoff, carrots; spinach salad.
- **Snack:** One orange with 1/2 cup low-fat cottage cheese.

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