



Nutrition and Fitness

MS Support Group

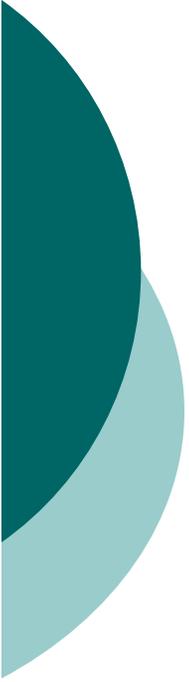
12 November 2003

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Nutrition



MS and Nutrition

“Maintenance of general good health is very important for persons with MS or any chronic disorder. A well-balanced and carefully planned diet will help to achieve this goal. MS specialists recommend that people with MS adhere to the same low-fat, high fiber diet that is recommended for the general population.”

The MS Information Sourcebook, produced by the National MS Society.

Food Sources and Amount: Quality and Quantity

- Variety is key
- Energy Nutrients
- Portion Sizes
 - Carbohydrates
 - Protein
 - Fat
- Meal Plans



Variety is Key

A Healthy Lifestyle...

- ☑ Appropriate food choices,
- ☑ Regular medical checkups,
- ☑ Physical activity,

...and Variety!



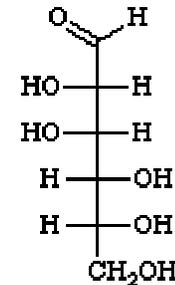
Energy Nutrients

- Carbohydrates
- Protein
- Fat



Energy Nutrients: Carbohydrates

- Primary source of fuel for the body
- Some carbohydrate is necessary for fat metabolism
 - 4 Calories/Gram
 - Preferred source of energy for the brain and muscles
- Types
 - Simple
 - Complex
 - Fiber



45-65% Total Calories

Carbohydrates, cont'd

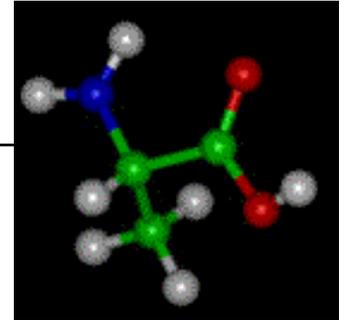
Choose



Limit



Energy Nutrients: Protein



- 4 Calories/Gram
- Functions
 - Builds and maintains body tissues
 - Transports oxygen
 - Regulates body functions (hormones, enzymes, antibodies)
- Provides satiety
- Americans often consume in excess of needs

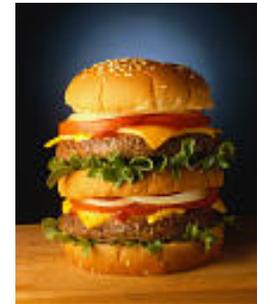
10-35% Total Calories

Protein, cont'd

Choose



Limit





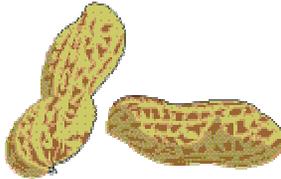
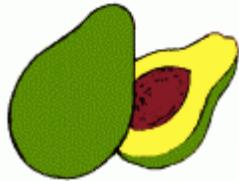
Energy Nutrients: Fat

- Energy source
 - 9 Calories/Gram
 - Primary energy store
- Functions
 - Insulation & padding
 - Carrier of fat-soluble vitamins
 - A, D, E & K
- Types
 - Mono-unsaturated, Poly-unsaturated
 - Saturated, Trans-fats (Hydrogenation)
 - Provides flavor

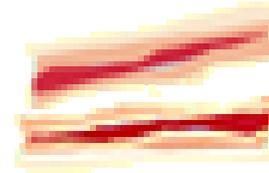
20-35% Total Calories

Fat, cont'd

Choose



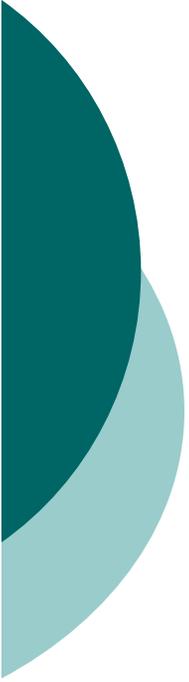
Limit



Portion Distortion

	Was	Now		Was	Now
	6 ounces (85 calories)	20 ounces (300 calories)		2 oz. patty + bun (270 calories)	
	3-inch diameter (140 calories)	5 to 6 inches (350 calories)		2 ounces (210 calories)	
	1 oz. bag (150 calories)	1.75 oz. bag (260 calories)		10-inch diameter	12½ -inch diameter
	2 cups (280 calories - w/o sauce)	4 cups or more (560 calories or more - w/o sauce)			

Developed by the Children's Nutrition Research Center



Serving Sizes

Size does matter!

- Bread, cereal, rice, pasta
 - ½ cup cooked rice, pasta or cereal
 - 1 slice bread, small tortilla, small roll
 - ½ bun, bagel
 - 3-4 plain crackers
- Vegetables
 - ½ cup chopped raw or cooked
 - 1 cup raw leafy
 - ¾ cup vegetable juice
 - 1 cup bean or vegetable soup
- Fruit
 - 1 piece fruit or melon wedge
 - ¾ cup 100% fruit juice
 - ½ cup chopped, cooked, or canned fruit

Serving Sizes

- Milk, yogurt & cheese
 - 1 cup milk
 - 1 cup yogurt
 - 1 ½ - 2 oz cheese
 - 1 – 1 ½ cup ice cream
- Extras (Fats, sweets)
 - 1 Tbs. salad dressing
 - 1 slice bacon
 - 12-ounce soda
 - 1 packet sugar
- Meat & Meat Alternatives
 - 3 oz cooked lean beef, pork, lamb, veal, poultry, fish, or tofu product
 - 2 Tbs. peanut butter or 1 egg or 1/3 cup nuts or ½ cup cooked beans count as 1 oz meat



Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving

Calories 250 Calories from Fat 110

	% Daily Value*
Total Fat 12g	18%
Saturated Fat 3g	15%
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	

Vitamin A 4% • Vitamin C 2%
Calcium 20% • Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrates 4 • Protein 4

Serving

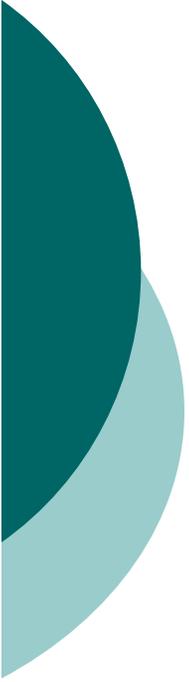
Number of servings

Nutrients in one serving.

- Calories
- Total fat in grams
- Saturated fat in grams
- Cholesterol in milligrams
- Sodium in milligrams

The " % Daily Value" shows you how much of the recommended amounts the food provides in one serving,

Here is the recommended daily amount for each nutrient for two calorie levels.

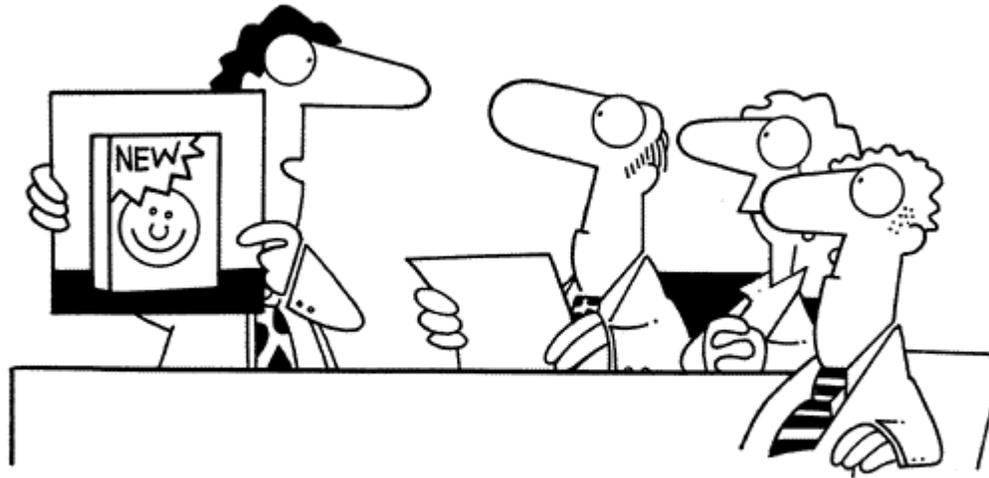


Fat Matters, But Calories Count

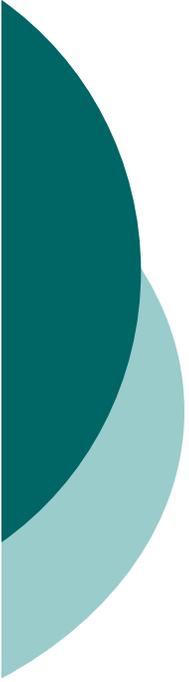
Read the nutrition labels and compare the calories in products.

- **1 Fig Cookie**
 - Fat free 51 calories
 - Regular 56 calories
- **1/2 cup Vanilla Frozen Yogurt**
 - Nonfat 100 calories
 - Regular 104 calories
- **2 Tbsp. Peanut Butter**
 - Reduced Fat 187 calories
 - Regular 191 calories

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**“Our new product has no fat, no cholesterol,
no calories, no sugar, no salt and no preservatives.
The box is empty, but it has exactly what everyone wants!”**



Eating Plan Worksheet

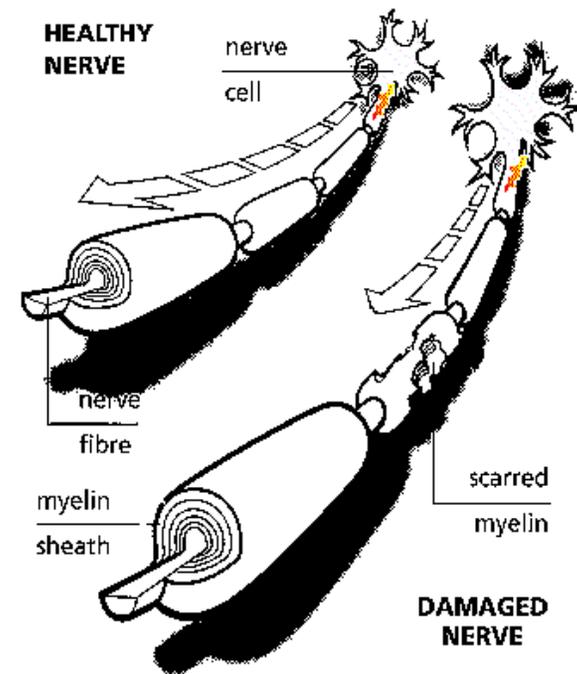
- Present weight in pounds _____
- Multiply present weight by CURRENT activity level
 - 11 = No regular physical activity (PA) w/sit-down job
 - 12 = No organized PA w/3-4 hrs walking or standing/day
 - 13 = Sporadic recreational activities, weekend warrior
 - 14 = Consistent job activities of lifting or stair climbing, or regular PA at least 3 x wk for 30-60 min. at THR
 - 15 = Extensive PA for 60 min. plus at THR, at least 4 x wk
- Subtract 500 calories to lose a pound a week.
- Add 500 calories to gain a pound a week.

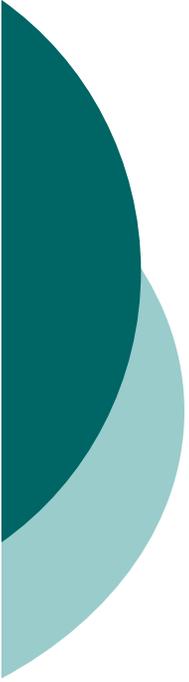


Exercise

MS & Exercise

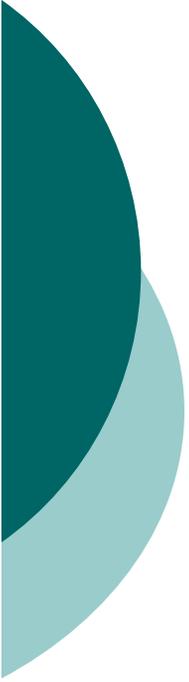
- Possible effects on exercise
- Exercise modes
- Setting goals
- Designing a program





Effects on Exercise

- Spasticity
- Incoordination
- Gait
- Impaired Balance
- Fatigue
- Heat sensitivity
- Sensory loss and numbness
- Cardiovascular dysautonomia
- Tremor
- Muscle weakness, paresis, paralysis

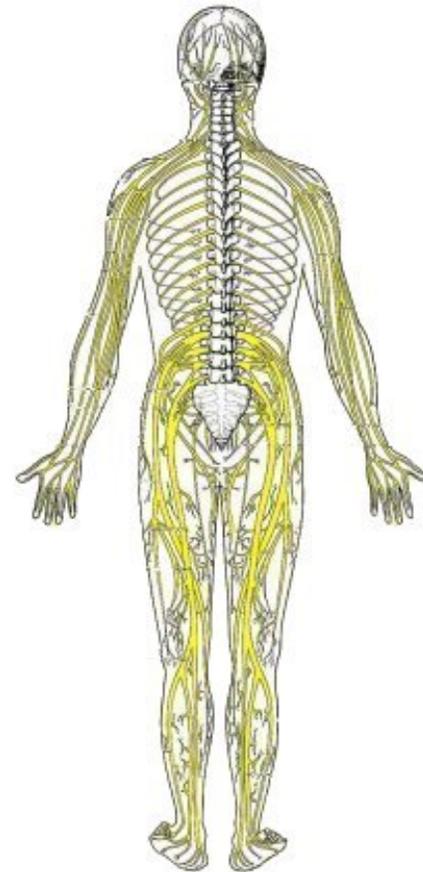


Spasticity

- Involuntary sustained muscle contractions
- Involuntary sudden movements
- Flexor spasticity – hips and knees are bent
- Extensor Spasticity – hips and knees are straight

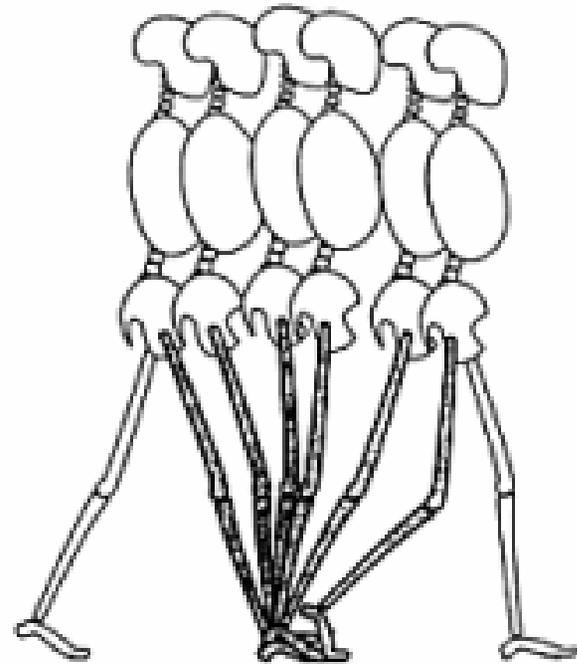
Incoordination

- Lack of coordination especially of muscular movements resulting from loss of voluntary control



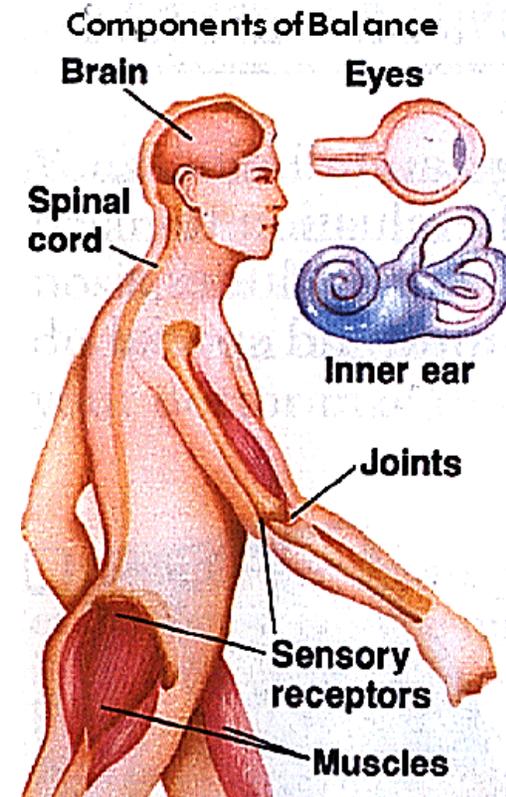
Gait

- Muscle Weakness
- Spasticity
- Impaired balance
- Sensory deficit
- Fatigue

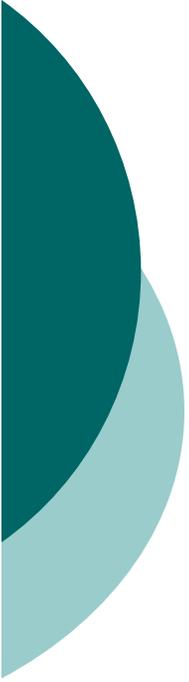


Impaired Balance

- Reduced ability to compensate for shifts in center of gravity
- Impaired motor/sensory sensation
- Uncoordinated response to body position changes



A problem with ANY of these components can result in dizziness or vertigo

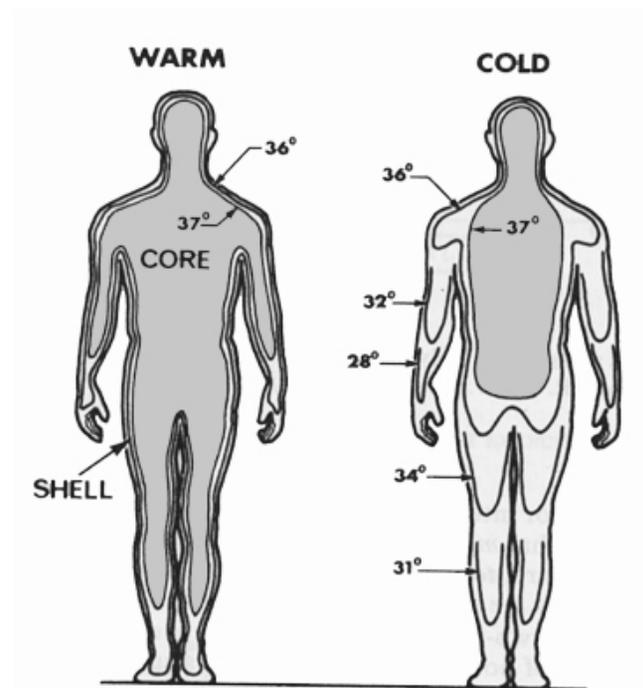


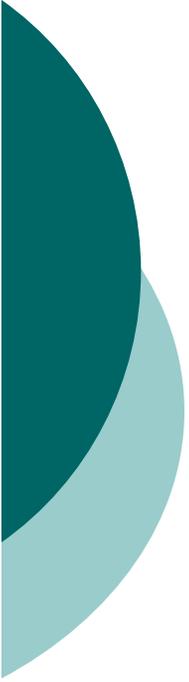
Fatigue

- Occurs on a daily basis
- May occur after a good nights rest
- Worsens as the day progresses
- Aggravated by heat and humidity
- Sudden onset
- Generally severe
- Interferes with daily responsibilities

Heat Sensitivity

- Increased temperature further impairs ability of a demyelinated nerves to conduct impulses
- As little as $\frac{1}{4}$ to $\frac{1}{2}$ degree rise in core body temperature can result in symptoms



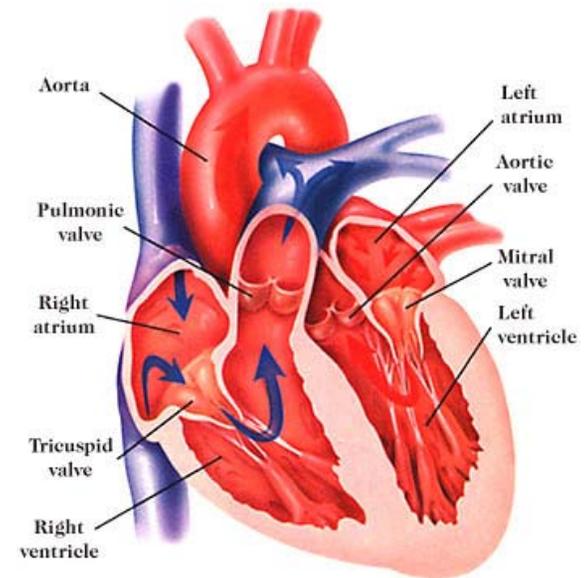


Sensory Loss and Numbness

- Loss of kinesthetic awareness
- Reduced Proprioception
- Numbness of the feet
(sensory ataxia)

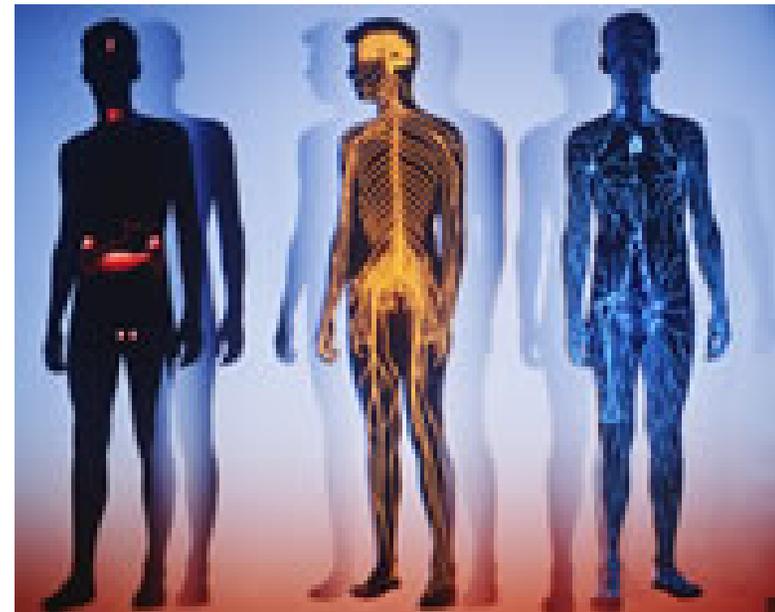
Cardiovascular Dysautonomia

- Dysfunction of the autonomic nervous system causing possible problems with cardio-acceleration and reduction in blood pressure response.



Tremor

- Intention tremor
- Postural tremor
- Nystagmus



Muscle Weakness, Paresis, Paralysis

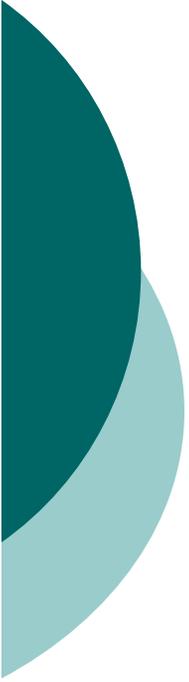
- Paraparesis – weakness in both legs
- Monoparesis – weakness in one leg
- Paralysis – loss of function of the lower body



First Things First

- Adults with chronic health problems, such as heart disease, diabetes, or obesity, or who are at high risk for these conditions should first consult a physician before beginning a new program of physical activity.





Traditional Exercise Modes

- Walking
- Jogging
- Stationary cycling
- Cross country skiing
- Inline skating
- Weightlifting

Yoga

- Benefits may include:
 - Increased body awareness
 - Release of muscular tension
 - Increased coordination and balance
 - Increased flexibility
 - Reduced fatigue
 - Improved circulation
 - Better tolerance to heat
 - Sense of control



Aquatic Exercise

- Benefits may include:
 - Improved thermal regulation
 - Improved strength and coordination
 - Improved endurance
 - Increased energy
 - Increased flexibility
 - Improved circulation
 - Sense of control



Designing a Program

Start **SMART**:

Specific

Measurable

Action-oriented

Realistic

Timed



Designing a Program

- Aerobic exercise
 - **ACSM** - "any activity that uses large muscle groups, can be maintained continuously, and is rhythmic in nature."
 - Exercise that increases demand on the heart and lungs
 - Creates greatest caloric expenditure
- Strength
 - Increase muscle mass
 - Increase resting metabolic rate
- Flexibility
 - Improve range of motion



Designing a Program

FITT Principle

- ***Frequency:*** 3-5 sessions per week
- ***Intensity:*** Training heart rate zone
- ***Time:*** 20-60 minutes
- ***Type:*** Mode of exercise



Designing a Program

Calculating THR

- lower end =
 $(220 - \text{age} - \text{RHR}) \times .4 + \text{RHR}$
- upper end =
 $(220 - \text{age} - \text{RHR}) \times .7 + \text{RHR}$



Talk Test

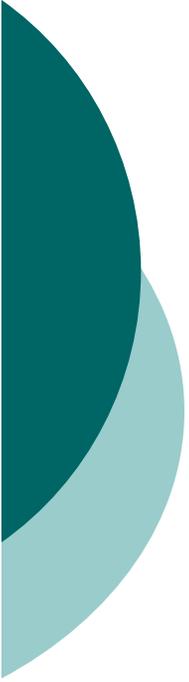
- During an "aerobic" exercise session, one should be able to carry on a conversation
- Only a couple of words or a phrase between breaths is a good indicator you are in your THR Range

Designing a Program

Rate of perceived exertion (*RPE*)

RPE	
1	no effort
2	very weak
3	weak
4	moderate
5	somewhat hard
6	hard
7	
8	very hard
9	very, very hard
10	maximum

	Least effort		
	6		
	7	very, very light	
	8		
	9	very light	
	10		
Effort	11	fairly light	ENDURANCE
	12		TRAINING
	13	somewhat hard	ZONE
	14		
	15	hard	STRENGTH
	16		TRAINING
	17	very hard	ZONE
	18		
	19	very, very hard	
	20		
	Maximum		



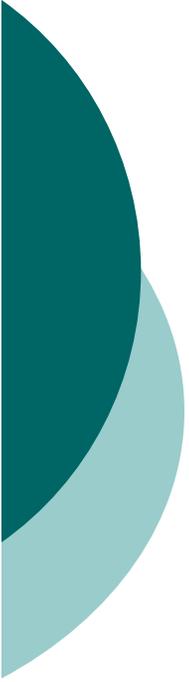
Hydration Recommendations

- Drink plenty of fluids everyday
- Drink cool uncarbonated water before, during and after exercise
- 20 oz. 2 hours before exercise
- 8-16 oz. 30 minutes before exercise
- 4 oz. Every 15 minutes during exercise
- As indicated by body weight and symptoms after exercise (16 oz. per lb lost)



Primary Concerns

- Focus on maintenance and improvement if possible
- Incorporate energy efficient exercises to reduce fatigue
- Be aware of psychological dimensions and disease progression
- Be aware of safety and environmental concerns



Primary Concerns

- Consult your doctor before starting exercise
- Goals based on SMART plan
- Use ACSM guidelines as a framework
 - Include FITT principles

844-HLTH (4584)



SNL'S HEALTH PROMOTION PROGRAM