

EXERCISE 101

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Adult Overweight & Obesity

Approximately 65% of adults in the U.S.
are overweight

Approximately 31% of those overweight
adults are categorized as obese.

2006 Shape of the Nation Report (NASPE/AHA)

The percentage of young people who are overweight has more than tripled since 1980.

16% of youth (6-19 years) are overweight – over 9 million young people.

About 10% of children aged 2 to 5 years are overweight.

Four in 10 Mexican-American and African-American youth (6 to 19 years) are overweight or at risk of being overweight.

Approximately 60 percent of obese children ages 5 to 10 years have at least one cardiovascular disease risk factor, such as elevated total cholesterol, triglycerides, insulin, or blood pressure....25 percent have two or more risk factors.

Children and adolescents who are overweight by the age of 8 are 80% more likely to become overweight or obese adults.

Exercise Guidelines

2006 Shape of the Nation Report (NASPE/AHA)

National Recommendations for Physical Activity

- ◆ School-age youth should participate daily in 60 minutes or more of moderate to vigorous physical activity that is developmentally appropriate, enjoyable, and involves a variety of activities.

National Recommendations for Physical Education

- ◆ Elementary school students \geq 150 minutes per week
- ◆ Middle and high school students \geq 225 minutes of physical education, for the entire school year.

Exercise Guidelines for Adults

Being active improves health...

30 minutes of accumulated physical activity on most days of the week will improve health in most adults.

Exercise Guidelines for Adults

Being “fit” goes beyond health and requires a comprehensive exercise program that includes the following components...

- 1) Cardiorespiratory endurance
- 2) Muscular strength and endurance
- 3) Flexibility
- 4) Resultant change in body composition

Before Starting an Exercise Program

Pre-Exercise Screening Forms

- 1) Legal issues
 - a. Informed Consent
 - b. Liability Waiver

- 2) Health and medical issues
 - a. Health Risk Appraisal/Health History Form
 - b. PAR-Q
 - c. Medical/Physician's Release Form

- 3) Psychological issues
 - a. Lifestyle Information Form
 - b. Exercise History and Attitude Questionnaire
 - c. Exercise Confidence Survey

Coronary Artery Disease Risk Factors

- ◆ Age (Men > 45; Women >55)
- ◆ Family history of heart attack or sudden death
- ◆ Current cigarette smoking
- ◆ High blood pressure
- ◆ High cholesterol
- ◆ Diabetes
- ◆ Physical inactivity
- ◆ Obesity

(See handout “Before You Start an Exercise Program”)

Comprehensive Exercise Program for Fitness

Anatomy of a Workout

- ◆ Warm Up
- ◆ Dynamic Stretching (extended warm up)
- ◆ Cardiorespiratory Exercise (“cardio”)
- ◆ Muscular Strength and Endurance (Resistance)
- ◆ Cool Down
- ◆ Flexibility (static stretching)

Warm Up

Benefits of Warming Up

- ◆ Muscles get warm, increasing their flexibility and decreasing risk of injury
- ◆ Heart Rate increases
- ◆ Joints become lubricated for smooth movement
- ◆ Blood flow is directed towards working muscles to supply oxygen and nutrients
- ◆ Body begins to release fuel into blood in the form of free fatty acids (fats) and glycogen/glucose

Warm Up

- ◆ Fluid movements, often without resistance, using major muscles groups to move joints through their full range of motion.
- ◆ Often includes movements similar to the actual target exercise or sport to be conducted.
- ◆ Dynamic Exercises will fall towards the end of the warm up.

Flexibility

Benefits of Flexibility Exercises

- ◆ Improved Posture
- ◆ Increased Mobility
- ◆ Decreased Risk of Injuries
- ◆ Enhanced Performance for Athletics as well as Activities of Daily Living (ADL)
- ◆ Extend the Warm up period (Dynamic)
- ◆ Part of the Cool down (Static Stretching)

When Should you “Stretch”?

After the body has been “warmed-up”

Post-workout is probably the best time to stretch

Following 5–15 min of light warm-up activity followed by stretching can be beneficial

Types of Stretching

Static Stretching

- ◆ A slow, controlled stretch that holds the desired tissues at an elongated length for 15–30 seconds
- ◆ NO “Bouncing”!

Dynamic Stretching

- ◆ An active stretch that mimics the activity to be performed
- ◆ Done through a full range of motion in a slow and controlled manner.
- ◆ Also known as “*Dynamic Exercise*”

How often should you Stretch?

- ◆ **Frequency:** Minimal 2-3 days/week; Ideal 5-7 days/week
- ◆ **Intensity:** Stretch to tightness at the end of the ROM but not to pain; mild discomfort
- ◆ **Time:** 15-30 seconds; 2-4 repetitions
- ◆ **Type:** Static stretch for all major muscle groups

Cardiorespiratory Exercise

“Cardio”

“Aerobic”

Thermoregulatory

**Key
Physiological
Systems for
Aerobic
Exercise
Performance**

Respiratory

Cardiovascular

Benefits of Regular Cardiorespiratory Exercise

- ◆ Improved Aerobic Capacity
- ◆ Lower Resting Heart Rate
- ◆ Decreased Blood Pressure
- ◆ Improved Circulation
- ◆ Improved Thermoregulation
- ◆ Increased Stamina for endurance exercise and for Activities of Daily Living
- ◆ Increased Caloric Consumption during Exercise

The Cardiorespiratory Workout

Includes:

- ◆ Warm-up
- ◆ Training at Desired Intensity/Heart Rate
- ◆ Cool-down

Can be one continuous activity, a combination of activities, or circuit training

How often should you do Cardio?

- ◆ Frequency: 3-5 days/week
- ◆ Intensity: moderate-to-vigorous
- ◆ Time: 20-60 continuous minutes or three 10 minute bouts throughout the day
- ◆ Type: Large muscle groups; dynamic activity

Hydration During Exercise

Replace body fluids as they are lost

Drink 4–8 ounces of water every 10–15 minutes during exercise

In hot **and** cold conditions, drink 8–16 ounces of water 1 hour prior to exercise

In hot **and** cold conditions, drink 16–24 ounces of water during the 30 minutes after exercise, whether thirsty or not

Reduce Exercise Intensity and Duration in Extreme Temperatures.

Avoid times of day when heat and/or humidity are the greatest

Sports drinks are beneficial for exercise lasting 60 minutes or more

Muscular Strength and Endurance

Muscular Conditioning Programs

- ◆ Gain/Regain Muscle Mass (Lean Body Mass)
- ◆ Increased Strength
- ◆ Increased Bone Density
- ◆ Increased Resting Metabolic Rate (~7-10 kcal/day per pound of muscle)
- ◆ Enhanced Body Fat Loss
- ◆ Improve Posture
- ◆ Decreased Risk of Injury
- ◆ Increase Strength, Speed, and Power for Athletics
- ◆ Increased Functional Strength, Mobility, and Balance
- ◆ Improve Quality of Life and Enhance Activities of Daily Living

Muscular Conditioning Programs

Work the largest muscle groups first

Take joints through the full Range of Motion (ROM)

Repetitions should take 1-2 seconds for “Up” phase of movement and 2-4 seconds for “Down” phase

A Set of repetitions should last 30–90 seconds

Increase the intensity by no more than 5–10% per week

Muscular Conditioning Programs

Load	Outcome	% 1 RM	Rep Range	Sets	Rest Periods
Light	Endurance	<70	12–20	1–3	20–30 sec.
Moderate	Hypertrophy strength	70–80	8–12	1–6	30–120 sec.
Heavy	Maximum strength	80–100	1–8	1–5+	2–5 min.

Core and Functional Training

- ◆ Strengthens core muscles of torso and upper legs
- ◆ Improved Posture
- ◆ Increased Performance for Athletics
- ◆ Enhanced Mobility and Function for Activities of Daily Living (ADL)
- ◆ Must be able to complete basic strength exercises before more complex
- ◆ Advances to full body movements
- ◆ Uses non-traditional strength training equipment

***Now, let's do some
exercise!***

***Starting with a warm up,
followed by some
resistance training.***

Balance Training

- ◆ Enhanced Balance for Activities of Daily Living (ADL)
- ◆ Enhanced Athletic Performance
- ◆ Maintaining mobility and independence as we age
- ◆ Decreasing our risk of falling and getting injured as we age
- ◆ Infants do Balance Training every day

Three Systems Involved in Balance

1. Vision
2. Vestibular - balance receptors in inner ear
3. Somatosensory - muscles and joints

When one of these systems declines, our balance declines with it

“Ground” Rules for Balance Training

- 1) Bare or stocking feet - “feel” the ground
- 2) Engage core muscles by pulling your belly button towards your spine as you exhale
- 3) Begin balance training near a chair, wall, or in a doorway to stabilize if off balance
- 4) Progression: standing balance on 2 legs before 1, seated balance on chair before stability ball
- 5) More sway = less balance

***Now it is your turn to do
some Balance Training.***

Strength Training and Body Composition

- ◆ Starting at age 25, U.S. Adults gain 1 pound per year for life
- ◆ This is 10 pounds gained per decade
- ◆ This is only part of the picture

Strength Training and Body Composition

- ◆ Adults actually average 1.5 pounds per year increase in body fat, while LOSING 0.5 pounds of muscle per year!
- ◆ The net value is a 10 pound weight gain per decade (+15 lb. fat and -5 lb. muscle)
- ◆ ***This is a 20 pound change in body composition in the wrong direction.***

Strength Training and Body Composition

- ◆ Strength Training can help us regain the muscle we have lost
- ◆ For each pound of muscle we get back, we increase Resting Metabolism by 7-10 kcals/day
- ◆ Programs that include strength training and aerobic exercise have consistently proven to be the best method for sustained body fat loss and body composition change.

Healthy Rates of Improvement

Weight Loss

Maximum rate of weight loss is 1–2 lb per week

Body fat decrease of approximately 1% per month

Muscle Gain

Maximum rate of muscle gain is 1–2 lb per month

Initial rate of muscle gain is 2–4 lb in the first 24 weeks

Mindful Exercise

Mindful Exercise

- ◆ Yoga
- ◆ Pilates
- ◆ Thai Chi
- ◆ Qigong
- ◆ Flexibility

Mindful Exercise

- ◆ Develops muscular strength and endurance
- ◆ Improves Posture
- ◆ Increases core strength
- ◆ Improves Flexibility
- ◆ Reduces Stress
- ◆ Enhances kinesthetic awareness
- ◆ Intermediate and advanced classes can also provide a moderate intensity aerobic workout

Similarities and Differences in the Exercise Responses in Youth compared to Adults

Youth have...

- ◆ Lungs that are smaller than Adults
- ◆ Smaller Cardiac Output than Adults
- ◆ Higher respiratory rate and heart rate during exercise
- ◆ Less efficient sweat production

General Training Principles - Youth

- Begin and end each session with 5-10 minutes of warm-up.
- Balance the workout by alternating “pairs” of muscle groups.
- Exercise the larger muscle groups first and then smaller muscle groups at the end.
- Lift and lower weights in a controlled fashion.
- Complete the full range of motion for each exercise.
- Allow 48 hours of recovery after each strength training session.

Basic Youth Strength Training Guidelines

No absolute age cut-off exists that should preclude youngsters from strength training.

- Be mature enough to accept instruction
- Want to participate
- Possess proficiency in the basic motor skills
- Adhere to proper form while lifting
- Avoid competitive lifting
- Be closely supervised

Benefits of Strength Training for Pre-pubertal & Post-pubertal Children

- ◆ Increased motor unit recruitment and synchronization
- ◆ Reduced injury potential
- ◆ Enhanced musculoskeletal fitness
- ◆ Improved body composition
- ◆ Increased bone density and bone mass
- ◆ Enhanced motor performance

HYDRATION TIPS FOR ACTIVE KIDS

- ◆ Encourage drinking on a set schedule.
- ◆ Offer the “right” kinds of fluids.
- ◆ Adjust hydration habits for the weather.
- ◆ Recognize the warning signs of dehydration.

NATA & AAP GUIDELINES FOR DRINKING

WHEN	KIDS < 90 lbs.	KIDS > 90 lbs.
1 hr. before activity	3-6 oz. of fluid	6-12 oz. of fluid
During activity every 20 mins.	3-5 oz. of fluid	6-9 oz. of fluid
After activity, replace fluids lost through sweat	Up to 8 oz. of fluid, per ½ lb. lost	Up to 12 oz. of fluid, per ½ lb. lost

*Never drink too much or attempt to gain weight by drinking excessive fluid. Overdrinking can cause **hyponatremia**, a rare medical condition that occurs when a person drinks excessively.*

THE RIGHT KINDS OF FLUIDS

- ◆ **When given a choice kids have been shown to drink 90% more sports drink than plain water.**
- ◆ **Sports drinks:**
 - **Help replace electrolytes lost through sweat.**
 - **Contain flavor to encourage drinking.**
 - **Provide energy to refuel during activity.**

SIGNS OR SYMPTOMS OF EARLY HEAT ILLNESS

- ◆ Headache.
- ◆ Dizziness.
- ◆ Weakness.
- ◆ Irritability.
- ◆ Fatigue.
- ◆ Nausea.
- ◆ Muscle cramps.

(NATA 2003)

Exercise Programming for Special Populations

Guidelines for Exercise with Most Special Populations

Physician's clearance

- a. Request exercise guidelines and limitations from client's physician
- b. Maintain close contact with client's physician

Extended warm-up and cool-down

- a. Longer than 10 minutes
- b. Many special populations have compromised metabolic and/or cardiorespiratory systems and it takes longer for their bodies to adjust during acute bouts of exercise

Guidelines for Exercise with Most Special Populations

Cardiorespiratory exercise

- a. Low- or non-impact
- b. Longer duration and lower intensity
- c. May be accumulated in shorter bouts throughout the day

Strength

- a. Lower resistance and higher repetitions
- b. Exceptions are osteoporosis and obesity

Modify as needed

Factors that affect adherence

- 1) Personal factors
 - a. Education
 - b. Income
 - c. Smoking
 - d. Weight
 - e. Past exercise experience
 - f. Exercise perceptions
 - g. Self-efficacy

Factors that affect adherence

2) Program factors

- a. Convenience
- b. Location
- c. Cleanliness
- d. Friendliness of staff
- e. Cost
- f. Variety in programming and equipment
- g. Intensity

Factors that affect adherence

3) Environmental factors

- a. Support from family and friends
- b. Contracts
- c. External rewards

**Thank
You!**



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