## NJ HEALTH & PHYSIOLOGY TEST FOR TEACHER CANDIDATES

## SHAPING YOUR HEALTH

#### Traditional Health Definitions

- Concerns
  - Morbidity: pertaining to illness and disease
  - Mortality: pertaining to death
- Health Care
  - Seek medical treatment when ill or injured
- Preventative or prospective medicine
  - Identifying risk factors and high-risk health behaviors to lower the risk of illness
  - Empowerment-individuals or groups gain increasing control over their health

#### Wellness

- A process intended to aid individuals in unlocking their full potential through the development of an overall wellness lifestyle.
- Emphasis on lifestyle
  - May not focus on mortality and morbidity but in practice shares many risk-reduction activities with health promotion approaches

## Changing Unhealthy Behaviors

- Several factors influence a person's desire to change a health behavior
- □ The person must:
  - 1. Know the behavior is associated with a health problem
  - Accept that the behavior increases personal risk for the health problem
  - Recognize that risk-reduction intervention programs exist and can be effective
  - 4. Believe the benefits of the new behavior justify the change in behavior
  - 5. Feel that significant others will be accepting of such changes

# ACHIEVING PSYCHOLOGICAL HEALTH

## **Emotional Intelligence**

- Ability to understand others and act wisely in human relations
- 5 primary domains:
  - Know your emotions
  - Manage your emotions
  - 3. Motivate yourself
  - 4. Recognize emotions in others
  - 5. Handle relationships

## Keys to Psychological Health

- Develop communication skills to foster improved social relationships
  - Verbal communication-be a skilled sender and listener
  - Nonverbal communication-facial expression, eye contact, personal space, body posture
  - Managing conflict
    - Listen
    - Focus on what to say and how to say it
    - Use assertive communication with "I" statements

## Keys to Psychological Health

 Cultivate a sense of humor to build a positive outlook on life

## MANAGING STRESS

#### What Is Stress?

- Stress
  - Physiological and psychological state of disruption
- Stressor
  - Factors or events, real or imagined, that elicit a state of stress
- Eustress
  - Stress than enhances quality of life
- Distress
  - Stress the diminishes quality of life

## Stress Response

- Physiological and psychological responses to positive or negative events that are disruptive, unexpected, or stimulating
- Learned and conditioned habits adopted early in life
- Basic human survival mechanism

#### Effects of Stress

- Stress and immunity
  - Chronic stress may cause the immune system to be under- or overactive
- Stress and cardiovascular disease
  - Type A personality: competitive, ambitious, impatient
    - Associated with heart attacks
  - Type B personality: relaxed, patient

## PHYSICAL FITNESS

### Four Components of Physical Fitness

- Cardiorespiratory endurance
  - Aerobic vs. anaerobic exercise
- Muscular fitness
  - Strength vs. endurance
- Flexibility
- Body composition

## Cardiorespiratory Endurance

- Ability of heart, lungs and blood vessels to process and transport oxygen over a period of time
- Produced by exercise involving continuous, repetitive movements
  - Examples: brisk walking, jogging, cycling
- Aerobic (with oxygen) energy production
- Structural and functional benefits

#### Muscular Fitness

- Strength: Ability to contract skeletal muscles to a maximal level
- Endurance: Ability to contract skeletal muscles repeatedly over a long period of time
- Improved by performing repeated contractions at less than maximal levels

### Flexibility and Body Composition

- Flexibility: Ability of your joints to move through an intended range of motion
- Body composition: The make-up of the body in terms of muscle, fat, water, and minerals

#### **Workout Routine**

- Warm-up (5-10 minutes of slow, gradual, comfortable movements related to the upcoming activity; end with a period of stretching)
- Conditioning (cardiorespiratory endurance, strength training, and/or flexibility workout following ACSM guidelines)
- Cooldown (5-10 minutes of relaxing exercises to return the body to resting state)

#### How Hard Should I Train?

- Intensity
  - □ Target heart rate (THR) = 65-90% of maximal heart rate
  - Maximum heart rate can be estimated by subtracting your age from 220
  - □ Target heart rate range= (220-age) x 65-90%

## **NUTRITION AND DIET**

## Carbohydrates

- Major energy source: 4 calories/gram
- Types
  - Monosaccharides
  - Disaccharides
  - Polysaccharides
- Recommended intake: 45-65% of total calories from carbohydrates

#### Fats

- Functions: Insulation, carrier of vitamins, storage of long-term energy, and satiety
- □ Energy source: 9 calories/gram
- Types
  - Saturated
  - Monosaturated
  - Polysaturated
  - Trans
- □ Recommended intake: 20-35% of total calories

#### Fiber

- Cellulose-based plant material that cannot be digested
- Provides no energy: 0 calories/gram
- Types
  - Soluble (gel-forming)
  - Insoluble (absorbs water)
- Benefits
  - Moves stool through digestive tract
  - Lowers blood cholesterol levels
  - Steadies blood sugar levels
- Recommended: 21-38 grams/day
  - Most American adults: 11 grams/day

#### **Vitamins**

- Organic compounds needed in small amounts for normal growth, reproduction, and maintenance of health
- Serve as co-enzymes
- Provide no energy: 0 calories/gram
- Types
  - Water soluble
    - B-complex vitamins and vitamin C
  - □ Fat soluble
    - Vitamins A, D, E, K

#### Vitamins: Should I Take a Supplement?

- Following dietary recommendations would allow most Americans to meet their nutrient needs without supplements
  - Many people eat too many nutrient-deficient foods
- Caution with using supplements
  - Hypervitaminosis = toxicity
  - Megadoses of any vitamin can be harmful
- Recommendations for certain groups
  - □ Folic acid, vitamin B-12, vitamin D

# MAINTAINING A HEALTHY WEIGHT

## Defining Overweight and Obesity

- Desirable Weight: weight range deemed appropriate for people, taking into consideration gender, age, and frame size
- Overweight: a person's excess fat accumulation results in body weight that exceeds desirable weight by 1-19%
- Obesity: a person's body weight is 20% or more above desirable weight

## Causes of Obesity

- □ Caloric balance: energy intake vs. energy output
  - Intake = Output: caloric balance
  - Intake > Output: positive caloric balance
    - Weight gain
  - Output > Intake: negative caloric balance
    - Weight loss
- Energy needs
  - Basal metabolic rate (BMR)
  - Activity requirements
  - Thermic effect of food

## Causes of Obesity

- Genetic factors
- Physiological and hormonal factors
  - Hyperthyroidism
  - Hypercellular obesity
  - Hypertrophic obesity
- Metabolic factors
  - Set point
  - Adaptive thermogenesis

## Causes of Obesity

- Family, social and cultural factors
- Environmental factors
  - Local environment
  - Packaging and price
  - Unit bias
- Psychological factors

## Weight Management Strategies: Lifestyle Approaches

- Balanced diet supported by portion control
- Moderate physical activity
  - 60 minutes/day for weight maintenance
  - 90 minutes/day for weight loss and maintenance
- Sleep
- Lifestyle support and problem solving

#### Anorexia Nervosa

- Diagnostic Criteria
  - Body weight 15% or more below desirable weight
  - Fear of weight gain distorted body image
  - In women, absence or 3 or more menstrual periods
  - In men, decreased sex hormone
- Serious medical complications, including death
- Treatment: medical and dietary interventions,
   psychological treatment

#### Bulimia Nervosa

- Diagnostic Criteria
  - Binge eating 2 or more times/week for at least 3 months
  - Lack of control over bingeing
  - Inappropriate compensatory behaviors (purging)
    - Vomiting or use of laxatives, diuretics, or other medications
    - Excessive exercise
    - Fasting
  - Over concern with body image
- Serious medical complications
- Treatment: nutritional and psychological counseling, medical consultation

## DRUG AND ALCOHOL USE

## The Central Nervous System

- Normal nerve activity
  - Neurotransmitters deliver message to receptors and returns to cell
- Drug interference
  - Alters deactivation, allowing continuous stimulation
  - Allows continuous slow release of neurotransmitter
  - Produces an altered neurotransmitter
  - Blocks the release of the stimuli completely

# Drug Misuse and Abuse

- Drug misuse: inappropriate use of legal drugs intended to be medications
  - Intentional or unintentional
- Drug abuse: any use of a legal or illegal drug in a way that is detrimental to health or well-being

#### Stimulants

- Key actions: stimulates the function of the central nervous system
  - Increase heart rate, blood pressure, brain function
  - Feelings of energy, exhilaration
- Examples
  - Cocaine
  - Amphetamine
  - Methamphetamine
  - Caffeine
  - Ritalin
  - Ephedra

# Depressents

- Key actions: slow the function of the central nervous system
  - Reduced heart and breathing rates, blood pressure
  - Lowered inhibitions, impaired judgment
  - Sedation, drowsiness, loss of consciousness
- Examples
  - Barbiturates
  - Rohypnol
  - Alcohol
  - Tranquilizers
  - GHB

#### **Narcotics**

- Key actions
  - Relief of pain, euphoria
  - Reduced heart rate and blood pressure
  - Sedation, drowsiness, confusion
- Natural and synthetic; derived from the Oriental poppy plant
- Examples
  - Opium
  - Morphine
  - Heroin
  - Oxycodone

#### Inhalants

- Volatile compounds
- Key actions
  - Unpredictable, drunk-like effects; aggression
  - Euphoria
  - Damage to respiratory and cardiovascular systems
- Examples
  - Gasoline
  - Glues
  - Paint
  - Aerosol propellants
  - Nitrites ("laughing gas")

# **Alcohol Consumption**

- One drink:
  - 12 ounces of beer
  - 5 ounces of wine
  - 1.5 ounces of liquor
- Current use: Consumption of least one drink in the past 30 days
- Binge drinking: Consumption of five or more drinks on the same occasion on at least 1 day in the last 2weeks

#### Alcohol-Related Social Problems

- Accidents
  - Motor vehicle collisions
  - Falls
  - Drowning
  - □ Fires and burns
- □ Crime and Violence
- Suicide

# Organizations That Support Responsible Drinking

- Mothers Against Drunk Driving (MADD)
- Students Against Destructive Decisions (SADD)
- BACCHUS
- GAMMA Peer Education Network

# Alcohol Advertising

- □ Targets minorities, women, and youth
  - College advertising
  - Wine cooler ads
  - Concentration of liquor stores and advertising in lowincome, ethnic communities

#### Treatment for Alcohol Problems

- Rehabilitation centers
- Hospitals
- Medication
- Counseling
- Support groups
  - Alcoholics Anonymous
  - Al-Anon and Alateen

# Marketing of Tobacco Products

- Controversy about advertising due to industry's knowledge of the health risks
- Restrictions on marketing of all tobacco products,
   BUT
  - Magazine advertising has increased
    - Especially in magazines with 15% or more youth readership
  - Free distribution of cigarettes in bars and restaurants
  - Luring teens through anti-smoking ads

# Development of Dependence

- Dependence: Physical and/or psychological need to continue the use of nicotine
- Physical dependence
  - Tolerance
  - Withdrawal
  - Titration
    - Particular level of a drug within the body
    - Adjusting the level of nicotine by adjusting the rate of smoking

#### Prevention and Intervention

- Preventing teen smoking
  - Targeted audience
  - Governments policies
    - Restrictions on advertising and promotions
    - Funding for smoking education
- Early childhood intervention
  - Decision making skills
  - Critical thinking and refusal skills
  - Support for smoke-free environments

# Chronic Obstructive Lung Disease

- Chronic bronchitis
  - Persistent inflammation or infection of the smaller airways within the lungs
- Pulmonary emphysema
  - Irreversible disease process in which the alveoli are destroyed
- Significant impact on quality of life

#### **Smokeless Tobacco Use**

- Types
  - Chewing tobacco
  - Snuff
- Risks associated with use
  - Leukoplakia
  - Erythroplakia
  - Periodontal disease
  - Oral cancer
  - Nicotine addiction
  - Other health risks

# CANCER

#### Cancer

# Cell regulation problem causing abnormal cell growth

#### Regulatory genes

 Genes that control cell specialization, replication, DNA repair, tumor suppression

#### Oncogenes

 Faulty regulatory genes believed to activate the development of cancer

#### □ Proto-oncogenes

Normal regulatory genes that may become oncogenes

#### The Cancerous Cell

#### □Characteristics:

- Infinite life expectancy due to telomerase
- Lacks contact inhibition
- Spreads to distant sites via metastasis
- Commands the circulatory system to provide additional blood supply (angiogenesis)

Benign tumors do not spread but can be dangerous if they crowd out normal tissues

#### Skin Cancer

- Risk factors
  - Severe sunburn during childhood, chronic sun exposure during young adulthood
- Prevention
  - Reduce exposure to sun's rays, use sunscreens, avoid tanning booths
- Early detection
  - Self-examination (see next slide)
- Treatment
  - Surgery, chemotherapy, interleukin-2

#### Preventive Measures

- Know your family history
- Select and monitor your occupation carefully
- Do not use tobacco products
- Monitor environmental exposure to carcinogens
- Follow a sound diet
- Control your body weight
- Exercise regularly
- Limit your exposure to the sun
- Consume alcohol in moderation, if at all

# **Treatment of Cancer**

- Surgery
- Radiation
- Chemotherapy
- New therapies

# PREVENTING INFECTIOUS DISEASES

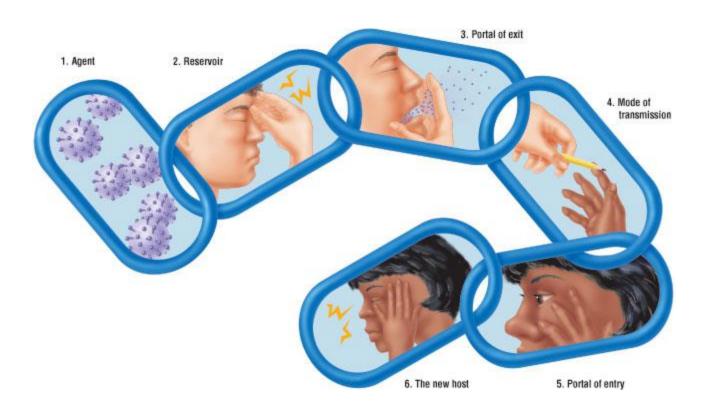
#### Infectious Disease Transmission

- Pathogen: A disease-causing agent
- Epidemic: A highly significant increase in the number of cases of an infectious illness existing in a given time period in a given geographical area
- Pandemic: An epidemic that has crossed national boundaries, thus achieving regional or international status
  - Example: HIV/AIDS

# Pathogens

- Viruses
- Prions
- Bacteria
- Fungi
- Protozoa
- Rickettsia
- Parasitic worms

# Chain of Infection



#### Chain of Infection

- Agent: Causal pathogen
- Reservoir: Pathogen's environment
- Portal of exit
- Mode of transmission
  - Direct
  - Indirect
- Port of entry
- New host

# HIV/AIDS

- Human immunodeficiency virus (HIV)
- Acquired immunodeficiency syndrome (AIDS)
- HIV attacks the helper T cells of the immune system
- Spread
  - Direct contact involving the exchange of body fluids (blood, semen, vaginal secretions)
  - Sharing of hypodermic needles
  - Infected blood products
  - Perinatal transmission (mother to fetus or newborn)

# HIV/AIDS

- HIV cannot be transmitted by sweat, saliva, or tears,
   even though trace amounts of HIV are observed
- Women are at higher risk than men of contracting
   HIV from an infected partner
  - HIV concentration is higher in semen compared with vaginal secretions

#### Treatment of HIV Infection

- No cure at this time
- HAART (highly active antiretroviral therapy) can significantly reduce viral load
- Antiviral drugs, usually taken in combination
  - Nucleoside/nucleotide reverse transcriptase inhibitors
  - Non-nucleoside reverse transcriptase inhibitors
  - Protease inhibitors
  - Fusion inhibitors
  - CCR5 antagonists
- Drug resistance

#### Prevention of HIV Infection

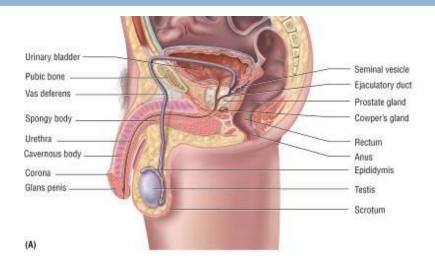
- Learn the sexual history and HIV status of your partner
- Limit the number of sexual partners
- Use condoms correctly and consistently
- Avoid contact with body fluids
- Curtail the use of drugs
- Never share hypodermic needles
- Refrain from sex with known injectable drug users and other high-risk partners
- Get regular tests for STDs
- Do not engage in unprotected anal intercourse

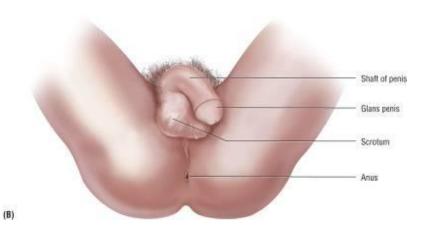
# ORIGINS OF SEXUALITY, SEXUAL BEHAVIOR AND RELATIONSHIPS

# Male Reproductive System

- Testes
  - Sperm development
  - Interstitial cell-stimulating hormone
  - Follicle-stimulating hormone
- Scrotum
- Ducts
- Seminal vesicles
- Prostate gland
- Cowper's glands
- Penis

# Male Reproductive System

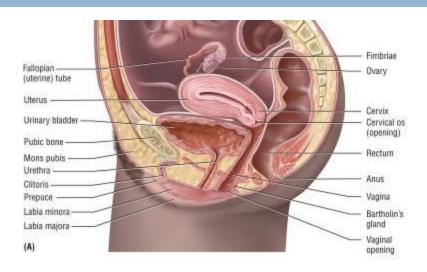


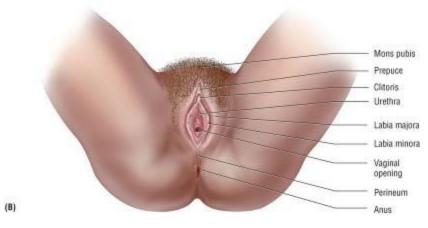


### Female Reproductive System

- Mons pubis
- Labia majora and labia minora
- Clitoris
- Vestibule
- Vagina
- Uterus
- Fallopian tubes
- Ovaries

# Female Reproductive System





#### Sexual Orientation

- Heterosexuality Sexual attraction to the opposite gender
- Homosexuality Sexual attraction to the same gender
  - "Gay" refers to a male homosexual
  - "Lesbian" refers to a female homosexual
- Bisexuality Sexual attraction toward both genders

# Gender Identity Issues

- Transsexualism A person rejects his or her biological sexuality
- Transvestism A person derives sexual pleasure dressing in the opposite gender's clothes
- Transgenderism Persons whose appearance and behaviors do not conform to society's traditional gender role expectations

## Relationships and Lifestyles

- Marriage
- Age at first marriage has increased
- Gay and lesbian partnerships
- Same-sex marriage

## Relationships and Lifestyles

- Divorce
  - Half of all marriages end in divorce
  - Unrealistic expectations
- Singlehood
- Cohabitation
- Single parenthood

## **FERTILITY**

### Birth Control vs. Contraception

- Birth control refers to all procedures and methods that can prevent the birth of a child
- Contraception refers to procedures used to prevent fertilization

# Behavioral Contraceptive Methods

Abstinence	No sexual activity	100% effective
Chance	No method used	15% use effectiveness
Withdrawal ("coitus interruptus")	Removal of penis from vagina before ejaculation	73% use effectiveness

## Behavioral Contraceptive Methods

# Periodic abstinence (rhythm method)

- Calendar (calculating the unsafe days of a women's menstrual cycle)
- Basal body temperature (rise in body temperature correlates with timing of ovulation)
- Billings cervical mucus method (evaluate consistency of vaginal discharge to predict ovulation)
- **Symptothermal** (combines basal temperature and mucus methods)

75% use effectiveness

# Over-the-Counter Contraceptive Methods

- Spermicides
  - Foams
  - Creams
  - Jellies
  - Films
  - Suppositories
- Condoms
  - Male
  - Female
- Contraceptive sponge

# INFORMED HEALTH CARE CONSUMER

#### Sources of Health Information

- Family and friends
- Advertisements and commercials
- Labels and directions
- Folklore
- Testimonials
- Mass media
- Health practitioners
- Online computer services

- Health reference publications
- Reference libraries
- Consumer advocacy groups
- Voluntary health agencies
- Government agencies
- Qualified health educators

# Prescription vs. Over-the-Counter Drugs (OTC)

- Prescription drugs must be ordered for patients by a licensed practitioner
- Active ingredient is typically a higher concentration than OTC
- Price is much higher than OTC
- Both are sold as brand name and generic
- Both are regulated by the FDA

#### PROTECTING YOUR SAFETY

# What Are Intentional Injuries?

- Injuries purposefully inflicted
  - By the victim
  - By another person
- Interpersonal violence
- Family violence
- Violence in communities

#### Interpersonal Violence

- ☐ Homicide
- Assault
- Robbery
- Rates of violence crime victimization
- Stalking
- Sexual harassment

- Bias and hate crimes
  - Criminal acts directed at a person or group solely because of a specific characteristic
  - Race, religion, sexual orientation, ethnic background, etc.
- Rape and sexual assault
- Acquaintance/date rape

# Family Violence

- Use of physical force by one family member against another with the intent to hurt, injure, or cause harm
  - Intimate partner violence
  - Maltreatment of children
  - Maltreatment of elders

#### Violence in Our Communities

- School violence
  - Fights
  - Threats
  - Vandalism
  - Theft
  - Weapons-carrying
- □ Violence in college
  - College students experience less violence than sameage nonstudents
- Youth and gang violence

#### Unintentional Injuries

- Injuries that occur without anyone's intending that harm be done
- Recognize that injuries are preventable
- Be aware of injuries that occur in the following environments or situations:
  - Motor vehicles
  - Home/residence
  - Recreational activities

# Motor Vehicle Injuries and Safety

- Motorcycle safety
  - Wear a helmet
  - Protect skin from serious injury
    - Gloves, boots, heavy clothing
  - Get proper training
  - Don't ride on wet roads if you don't have to
  - Ride defensively
  - Avoid alcohol or other drug use

# Residential Injuries and Safety

- Poisonings
- □ Falls
- Exposure to heat, smoke, flames
- Suffocation
- Firearms

# THE ENVIRONMENT AND YOUR HEALTH

#### Personal Environment

- □ Home
- Neighborhood
- Workplace
- Health concerns of personal environment:
  - Indoor air quality
  - Drinking water
  - Endocrine disrupters
  - Noise

#### Air Pollution

- Sources
  - Internal combustion engines
  - Oil refineries, chemical production
- Health effects
  - Carbon monoxide
    - Impaired respiration
  - Nitrogen and sulfur oxides
    - Lung tissue damage
    - Respiratory effects
  - Polycyclic aromatic hydrocarbons (PAHs)
    - Cancer
    - Fetal effects

#### Air Pollution

- Tropospheric ozone ("smog")
  - Lung damage
  - Reduced lung capacity
  - Respiratory distress
- Air toxics
  - Cancer
  - Reduced fertility, birth defects
- Taking Action
  - Check information on local air quality
    - Avoid outdoor activities during alerts
  - Limit personal contribution

# Global Climate Change

- Greenhouse gases
  - Trap heat radiated from the earth; increase global temperature
  - Carbon dioxide, methane, nitrous oxide, tropospheric ozone, water vapor
- Effects of climate change
  - Coastal flooding
  - Increased frequency and severity of destructive weather events
  - Expanded range of disease-carrying insects
  - Decreased air and water quality
  - Decreased food availability

# Global Climate Change

- Taking action
  - Conserve electricity
  - Drive fuel-efficient vehicles
  - Use mass transit
  - □ Reduce, reuse, recycle
  - Purchase energy-efficient appliances
  - Vote, volunteer

## DYING AND DEATH

# Psychological Stages of Dying

- Denial
- Anger
- Bargaining
- Depression
- Acceptance

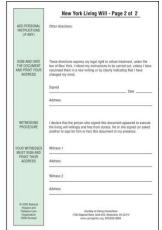
#### Interacting with Dying People

- Be genuine and honest
- Provide emotional support
- Allow people to express their feelings

## End-of-Life Options and Decisions

- Advance HealthcareDirectives
  - Living will
  - Durable power of attorney for health care





#### Coping with the Death of a Loved One

- Child
  - Miscarriage
  - Lost after birth
  - Grieving
- Parent
- Spouse
- Sibling

#### Rituals of Death

- Cultural differences
- Full funeral services
  - Embalming
  - Calling hours
  - Funeral service
- Memorial service
- Disposition of the body
  - Ground burial
  - Entombment
  - Cremation
  - Anatomical donation
- Costs