

# **I. LEADERSHIP AND GENERAL KNOWLEDGE OF HEALTH**

## **A. HEALTH, WELLNESS, PHYSICAL FITNESS**

The SAFE Exercise Leader will demonstrate an understanding of the basic-principles of health, wellness and physical fitness.

1. General Principles of Health and Wellness
  - a. define health and wellness
  - b. explain the following models: Iceberg Model, Holistic Model, and Wellness-Illness Continuum, and Maslow's Hierarchy of Needs
  - c. discuss the concept of locus of control and its relationship to health
  - d. define stress
  - e. explain the positive and negative responses to stress and their effects on health and wellness, recognize symptoms, and discuss techniques that can be incorporated into a group exercise class to reduce negative responses to stress
2. General Principles of Physical Fitness
  - a. define physical fitness
  - b. define and discuss the ten components of fitness
  - c. define somatology
  - d. discuss body types and genetic factors related to fitness
3. General Philosophy of Safe Exercise Related to Health and Fitness
  - a. discuss misconceptions that individuals commonly have about fitness, factors the effect inaccurate perceptions, training for health vs. training for sports, and philosophy of fitness to enhance life-time health for the general public
  - b. discuss Aristotle's principle of the Golden Mean and how it relates to life-long health, wellness, and fitness

## **B. PRINCIPLES OF LEADERSHIP**

The SAFE Exercise Leader will demonstrate responsibility through a comprehensive understanding of leadership principles.

1. General Principles of Leadership, Safety, and Responsibility
  - a. define the following terms: group exercise, leadership, safety, certification, continuing education, CPR, First Aid, and special populations
  - b. discuss and explain the legal responsibilities for group exercise leaders regarding job classification, taxes, licenses, business entities, liability insurance, music licensing laws, equipment and product liability
  - c. discuss the importance and use of the following forms: health screening forms, physicians release to exercise, informed consent, and injury report
  - d. describe appropriate attire including proper footwear
  - e. discuss qualities of being a good role model including, positive attitude, strategies to promote adherence, appropriate selection of music, and strategies for participant education
  - f. define the Transtheoretical Model of Change and its relationship to leading participants toward achieving a positive outcome

2. Providing a Safe Exercise Environment
  - a. describe guidelines for a safe exercise environment including proper temperature, ventilation, lighting, floor surface, safe set-up, needed modifications in compromising environments, proper level of sound, and providing means of hydration
  - b. define and discuss methods of cueing
  - c. define the following terms: pulse rate, pulse rate sites, heart rate, Karvonen Formula, target heart rate, resting heart rate, maximum heart rate, sub-maximal heart rate, perceived exertion, overtraining, overexertion, dyspnea index, participant response,
  - d. calculate a target heart rate using the Karvonen Formula
  - e. demonstrate methods of monitoring exertion levels, proper technique including alignment and correct posture, and correctional techniques
  - f. discuss the importance of pre-planning the class and general strategies for modification in class
  - g. identify and demonstrate the beat of music
  - h. identify special populations that require specialty training above the parameters of these objectives: morbidly obese, pre and post natal females, older adults, physically handicapped, persons with known cardiovascular disease, sport and performance athletes, special physical disciplines, individuals on medications, individuals with other medical problems, and those recovering from surgery or under medical supervision.
  - h. discuss strategies for protecting self (i.e. the instructor) from voice injury, loss of hearing, burn-out, overtraining, and overexertion.

## **II. CORE INFORMATION AND SKILLS FOR DESIGNING AND LEADING SAFE GROUP EXERCISE CLASSES**

### **A. BASIC ANATOMY, KINESIOLOGY, AND EXERCISE EVALUATION**

The SAFE Exercise Leader will demonstrate an understanding of basic anatomy and kinesiology and the principles of exercise evaluation

1. Basic Organization of the Human Body
  - a. define the following terms: anatomy, cell, tissue, organs, organelle, and mitochondria, hyaline, adipose, reticular, fibrous, discs, diaphysis, epiphysis, Haversian Canal, and epiphyseal plate,
  - b. name the systems 10 systems of the human body: skeletal, muscular, circulatory, respiratory, nervous, integumentary, digestive, excretory, endocrine, and reproductive
  - c. discuss the general organization of the human body
  - d. define the two types connective tissue, (i.e. loose and dense)
  - e. define and discuss the six types of dense connective tissue, their characteristics, and their relevance to safe exercise: ligaments, tendons, cartilage, fascia, aponeurosis, and bone
  - g. define the following terms: impact, low impact, high impact, intensity, low intensity, and high intensity, and explain their relevance to dense connective tissue
2. The Skeletal System
  - a. identify the major bones

### 3. Terminology Related to Movement

- a. define kinesiology
- b. define the following terms: anatomical position, superior, inferior, anterior, posterior, medial, lateral, proximal, distal, flexion, extension, hyper-extension, abduction, adduction, horizontal abduction, horizontal adduction, internal rotation, external rotation, circumduction, supine, prone, supination, pronation, dorsi-flexion, plantar-flexion, inversion, eversion, elevation, depression, retraction, protraction, lateral flexion, forward flexion, axial rotation, sagittal plane, frontal plane, and transverse plane.

### 4. The Major Joints

- a. define articulation
- b. define and discuss general information about range of motion
- c. identify the three categories of articulations and six types of articulations
- d. discuss the general importance of performing exercises with the natural joint range of motion
- e. identify the major diseases and conditions for the following major joints: vertebral column, shoulder, hip, knee, elbow, ankle, wrist
- f. identify and discuss the structure and available range of motion for the following major joints: vertebral column, shoulder, hip, knee, elbow, ankle, wrist
- g. identify the following parts of the vertebra: body, spinous process, transverse process, facet, intervertebral foramina, intervertebral disc, annulus fibrosus, nucleus pulposus and vertebral canal
- h. identify the following parts of the shoulder: glenohumeral joint, scapulothoracic joint, acromioclavicular joint, acromioclavicular ligament, sternoclavicular joint, acromion, coracoid process
- i. identify the following parts of the hip: acetabulum, trochanter, head of the femur, pubic symphysis, and anterior superior iliac spine
- j. identify the following parts of the knee: condyles, tibial tuberosity, meniscus, cruciate ligaments, and collateral ligaments
- k. identify the following parts of the elbow: olecranon process, epicondyles, trochlea, semi-lunar notch
- l. identify the following parts of the wrist: radiocarpal joint, intercarpal joints
- m. identify the following parts of the ankle: talotibial joint, and subtalar joint

### 3. Terminology Related to Muscle, Basic Muscle Physiology, Basic Kinesiology Related to Muscles

- a. define the following terminology: actin, myosin, sarcomere, myofibril, fasciculae, contraction, stretching, static, ballistic, isokinetic, isotonic, resistance, agonist, antagonist, synergistic, stabilizer, proprioceptor, sensory nerve, motor nerve, golgi tendon organ, kinesthetic awareness
- b. explain the three properties of muscle: elastic, extensible, contractile
- c. define the three types of contractions and demonstrate an example: concentric, eccentric, and isometric
- d. explain the three types of levers in the body
- e. explain the principle of transferred momentum and its relationship to exercise
- f. explain the functioning of the following: a muscle contraction, the stretch reflex, and the lever system

#### 4. The Major Muscles

- a. identify the location, origins and insertions for the major muscles and muscle groups
- b. perform an exercise that stretches and contracts each of the major muscles and muscle groups
- c. organize basic choreography movements using the major muscles
- d. perform basic choreography movements using the major muscles to music

#### 5. Posture, Stability, Muscle Balance, and Alignment

- a. identify the center of gravity, line of gravity and correct posture in the human body in the following positions: standing, seated on the floor, seated in a chair, prone, supine, side lying, and four point (on hands and knees).
- b. identify the following conditions: lordosis, scoliosis, and kyphosis
- c. define the following terms: base of support, line of gravity, equilibrium, balance, and stability
- d. explain the procedures to conduct a plumb line, leg lowering, and posture analysis tests

#### 6. Exercise Evaluation and Injury Prevention

- a. discuss the four point exercise evaluation formula and use it to analyze any exercise for safety and effectiveness
- b. contrast A, B and C exercises using the A,B,C System of exercise evaluation.
- c. discuss general principles of safety

## **B. BASIC EXERCISE PHYSIOLOGY AND PROGRAMMING**

**The SAFE Exercise Leader will demonstrate an understanding of basic exercise physiology and principles of exercise programming**

#### 1. Basic Exercise Physiology

- a. define the following terms: exercise physiology, energy, potential energy, kinetic energy, metabolism, aerobic, anaerobic, adenosine triphosphate, lactic acid, Krebs cycle, phosphorylation, adenosine diphosphate, creatine phosphate, stroke volume, cardiac output, blood pressure, systolic blood pressure, diastolic blood pressure, hemoglobin, cardiovascular disease, atherosclerosis, arteriosclerosis, coronary heart disease, myocardial infarction, ischemia, angina pectoris, stroke, thrombus, embolus, oxygen consumption, valsalva maneuver, hypotension, hyperventilation,
- c. discuss the first Law of Thermodynamics, the three energy systems in the body, and the energy continuum
- d. identify the major parts of the circulatory and respiratory systems: heart muscle, ventricles, atrium, arteries, veins, capillaries, arterioles, venules, trachea, bronchii, bronchioles, lungs, alveoli
- e. explain the route of blood flow through the heart and the general functioning of the respiratory system
- f. explain the general effects that medications may have on the heart during exercise

#### 2. Training Principles and Structuring a Class

- a. discuss the training principles and benefits of training
- b. list a safe class structure for the following: aerobic class, muscle conditioning class, and circuit class

### **III. RELATED KNOWLEDGE**

#### **A. BASIC NUTRITION AND WEIGHT LOSS**

**The SAFE Exercise Leader will demonstrate an understanding of basic nutrition as it relates to exercise, and discuss safe weight loss strategies**

##### 1. Basic Nutrition

- a. define the following terms: nutrition, essential nutrient, nutritional relevancy, macronutrient, minor nutrient, HDL high density lipoprotein, LDL low density lipoprotein, total cholesterol/HDL ratio, trans fat, complex carbohydrate, and calorie
- b. discuss the six essential nutrients including: recommended percentages in the daily diet, their function, number of calories per gram, foods containing the nutrients, utilization, storage, RDA, and DRI
- c. explain the 2005 food pyramid and how to negotiate the FDA website
- d. explain the U.S. Dietary Goals for Americans
- e. explain the potential risk of exceeding recommended amounts of essential nutrients

##### 2. Nutrition and Exercise

- a. discuss the importance of adequate hydration with exercise
- b. discuss common misinformation regarding supplements, protein powder, energy drinks, and ergogenic aids
- c. explain a recommended pre-exercise meal

##### 3. Nutrition and Energy Balance

- a. explain the concept of energy balance as it relates to weight maintenance
- b. calculate estimated calories using the simple caloric formula and the FDA recommendations
- c. define basal metabolic rate, set point theory, cellulite
- e. discuss serving size
- f. discuss misconceptions and/or dangers of the following: diet pills, popular diets, starvation diets, saunas, plastic sweat suits, body wraps, cellulite, and spot reduction
- g. discuss safe strategies for weight loss including: the number of pounds per week to lose, the increase exercise, reduce calories recommended strategy for weight loss; contrast it to diet alone, exercise alone